Attention Deficit Hyperactivity Disorder (ADHD): identification, assessment, contextual and curricular variability in boys at KS1 and KS2 in mainstream schools

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Abstract

The concept of Attention Deficit Hyperactivity Disorder (ADHD) in children presents conceptually controversial and practical challenges on several levels. These include the theoretical basis of the disorder, its manifestations in everyday life and identification and assessment procedures. The field has attracted considerable attention from professionals in the areas of education, psychology and health. One of the major areas where ADHD behaviours can present problems is in school settings.

The present research derives from, and addresses, English educational perspectives and practices, based in school settings. It was primarily concerned with seeking new insights and generating testable hypotheses concerning incidence, multi-professional identification, assessment and management of the condition and situational variability in ADHD symptoms in schools. The exploratory study was in two related parts. These were undertaken concurrently using a combination of quantitative and qualitative techniques and data gathering methods.

Part 1 of the research was based on detailed analyses of data from the first countywide ADHD survey covering all schools in a Local Education Authority in the West Midlands (LEA 1) in 2003. Data pertaining specifically to pupils at key stages 1/2 have been extracted from the 2003 survey data and subjected to further descriptive analyses. Comparisons have been made with findings from five other LEA school surveys in order to obtain a more extensive appraisal of the reported incidence of the disorder.

Part 2 adopted a case study approach in which data-gathering techniques included the use of field notes, a range of interviews, analysis of documents and observation. Two classroom observation schedules have been devised and used extensively over a two-year period throughout six individual case studies in schools within LEA 1. The case studies have produced a wide range of unique data on the variability of ADHD symptoms across curricular contexts and over time.

The findings and hypotheses generated in the present research have significance for inclusive educational practice, highlighting the importance of multi-professional approaches to the identification and management of ADHD and pedagogical and curricular flexibility in schools. These form part of the Government's ongoing reform of children's services as set out in *Every Child Matters* (DfES, 2003) and *Removing Barriers to Achievement* (DfES, 2004a).

SECTION II – RESEARCH METHODOLOGY

SECTION IV – DISCUSSION, REFLECTIONS

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Abbreviations

The following words and phrases appear in the text in full on the first occasion they are used. Subsequently the abbreviation is used.

ABC clinic	Attention and Behaviour Children clinic
ADD	Attention Deficit Disorder
ADDISS	Attention Deficit Disorder Information and Support Service
ADHD	Attention Deficit Hyperactivity Disorder
ALS	Additional Literacy Support
ASD	Autistic Spectrum Disorder
APA	American Psychiatric Association
BERA	British Educational Research Association
BESD	Behavioural, Emotional and Social Development/Difficulty
BID	Behavioural Inhibition Disorder
BPS	British Psychological Society
CAMHS	Child and Adolescent Mental Health Service
CASBAT	Communication and Social Behaviour Assessment Team
CD	Conduct Disorder
CNS	Central Nervous System
CPD	Continuing Professional Development
DAMP	Deficits in Attention, Motor control and Perception
DCD	Developmental Co-ordination Disorder
DDAT	Dyslexia, Dyspraxia and Attention Disorder Treatment
DfE	Department for Education
DfEE	Department for Education and Employment
DfES	Department for Education and Skills
DES	Department of Education and Science
DHT	Deputy Headteacher
DLA	Disability Living Allowance
DSM-IV	Diagnostic and Statistical Manual (of Mental Disorders) (4^{th} ed.)
DT	Design and Technology
(S)EBD	(Social), Emotional and Behavioural Difficulties
EP	Educational Psychologist
EPS	Educational Psychology Service
EWO	Educational Welfare Officer
FIS	Fixed Interval Sampling
FSM	Free School Meals
GP	General Practitioner
HA	Health Authority
HKD	Hyperkinetic Disorder

ICD-10	International Classification of Diseases (10th ed.)
ICT	Information and Communication Technology
IEP	Individual Education Plan
ITS	Instantaneous Time Sampling
KS	Key Stage
LEA	Local Education Authority
LBSS	Learning Behaviour and Support Service
LMS	Local Management of Schools
LSB	Learning Support Base
NCB	National Children's Bureau
NC (Y)	National Curriculum (Year)
NG	Nurture Group
NHS	National Health Service
NICE	National Institute for (Health and) Clinical Excellence
OCD	Obsessive Compulsive Disorder
ODD	Oppositional Defiant Disorder
OFSTED	Office for Standards in Education
ORACLE	Observational Research and Classroom Learning Evaluation
OT	Occupational Therapy
PACE	Primary Assessment, Curriculum and Experience
PE	Physical Education
PRU	Pupil Referral Unit
PSHE	Personal, social and health education
RE	Religious Education
SA	Statutory Assessment
SALT	Speech and Language Therapy
SAT	Standard Assessment Task
SEN	Special Educational Needs
SENCO	Special Educational Needs Co-ordinator
SENDA	Special Educational Needs and Disability Act
SSA	Special Support Assistant
T	Teacher
TA	Teaching Assistant
TOAD	'Talking out, Out of seat, Attention Problem, Disruption'
UK	United Kingdom
UNESCO	United Nations Educational, Scientific and Cultural Organisation
US (A)	United States (of America)
WHO	World Health Organisation

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Foreword

Over the lifetime of the research period several changes have occurred which require explanation. Those included below under *'changes in government legislation'* are covered in greater detail in the review of the literature in Chapter **3.2**.

Changes in government legislation:

1. *Identification of Special Educational Needs (SEN)*

During the pilot case study phase and the planning stage for the main research phase the then current *Code of Practice on the Identification and Assessment of SEN* (DfE, 1994) recommended the adoption of a five staged model of SEN. The 2001 *Special Educational Needs Code of Practice* (DfES, 2001a) amended these to three stages. There are references to both procedures in the present research.

2. *Other legislation*

Part 1 of the research was based on a questionnaire survey in the LEA undertaken as a collaboration between the then County Educational Psychology Service and a University College in 2003. There were changes in local authority organisation in 2005, following the publication of *Every Child Matters* (DfES, 2003) in which one of the reforms was the transformation of services for children and the appointment of a Director of Children's Services in each local authority. The use of the term 'local education authority' (LEA) appears throughout the reporting of both **Parts 1** and **2** in the present research, although it has since largely been discontinued.

Local school system

At the time of writing there are two systems operating in schools within the LEA, although this is currently under review and changes are planned for the future. Some areas have a two-tier system with primary schools and secondary schools, whereas in other areas a three-tier system is in operation. In both **Parts 1** and **2** reference is made to both systems.

Name change

The researcher registered in 2001 for the present PhD research at a University College in the West Midlands, which was awarded University status in 2005.

SECTION 1 – BACKGROUND TO THE RESEARCH

Chapter 1

Research outline

The complementary overall aims of the present research were to obtain an overview of the incidence of Attention Deficit Hyperactivity Disorder (ADHD) in National Curriculum Year 1 to Year 6 pupils attending schools in a Local Education Authority (LEA) and to explore in-depth the variability of ADHD symptoms. The main objectives were:

1. to survey the incidence of pupils with ADHD in all primary and first schools within the LEA;
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.

The two-part research was primarily concerned with the *generation of hypotheses* concerning variability in the identification and incidence of ADHD symptoms and their manifestation across curricular contexts and over time, rather than *hypothesis testing*.

The exploratory study adopted a mixed method approach and used a combination of both quantitative and qualitative techniques and data gathering methods in aiming to achieve the above objectives. **Part 1** was based on detailed analyses of data from a questionnaire survey on ADHD in schools in an LEA, together with comparisons with findings from other LEA school surveys. **Part 2** adopted a case study approach in which data-gathering techniques included the use of field notes, interviews, analysis of documents and observation, both informal and systematic. Appendix **1.1** provides details of the timetable involved in the gathering of data in **Parts 1** and **2** of the research.

In **Part 1** of the research data on the incidence, identification and management of ADHD have been:

- collected for all schools within the LEA;
- extracted for key stage (KS) 1/2 pupils and subjected to further analyses;
- compared in detail with LEA 2 results; and
- compared more generally with results from further LEA surveys.

Prior to the main research phase, a pilot case study (not reported here) had been undertaken to test the practicality of obtaining the types of data identified as pertinent to the research. The individual case studies in **Part 2** have produced a wide range of context-unique data on the situational variability of ADHD symptoms and identification and assessment procedures in schools. Findings from the research as a whole have enabled empirically testable hypotheses to be developed in the following areas:

- incidence and gender ratio of ADHD;
- multi-professional identification, assessment and management of ADHD;
- school training needs;
- ADHD symptoms across curricular contexts and time; and
- comorbid/associated features.

Chapter 2

Statement of the Problem

The present research is in two related parts, undertaken concurrently, using differing approaches. Ethical issues are systematically taken into account throughout the research process, including the choice of research settings, methods of data collection and the dissemination of results (British Educational Research Association (BERA), 2004; National Children's Bureau (NCB), 2006). The exploratory study derives from, and addresses, English educational perspectives and practices, based in mainstream school settings. It is designed to generate hypotheses relating to policy and practice in the education of pupils with ADHD. There are various definitions of a hypothesis. For the purposes of the present research a hypothesis is defined as 'a supposition that can be tested'. The stance from which the work is addressed is that of practice-based research by a qualified and experienced primary school teacher with previous experience of case study research and an interest in exploring and understanding more about the nature of ADHD. The research is concerned with the social, emotional and academic development of pupils identified as having ADHD and is set within the theoretical context of pedagogy in the classroom. The areas of investigation include:

- the historical and contemporary development of policy, procedure, provision and practice in schools; and
- the impact of ADHD on teaching and learning, with a consideration of the implications for practice of curricular variability in ADHD symptoms.

The "*evolving concept"* of ADHD in children presents conceptually controversial and practical challenges (British Psychological Society, 1996, p.8). The theoretical basis of its nature, aetiologies, incidence, prognoses and the effects of interventions are controversial areas of research and practice. The field has attracted considerable attention from professionals in the areas of education, psychology and health.

> *"During the last decade … ADHD has been one of the most widely observed, described, studied, debated and treated childhood disorders"* (Kendall, 2000, p.65).

This interest continues to accelerate. Internet searches have found evidence of a growing number of references to ADHD worldwide and in the United Kingdom (see Appendix **2.1**), although there are obvious limitations as to the validity of some of these sources.

One of the earliest references in the literature to the condition currently called ADHD was by a British physician, George Still in 1902 (Cooper and Bilton, 2002). Subsequently, published research evidence on ADHD has been predominantly from the USA (Hinshaw, 1994; Barkley, 1998; Goldstein and Goldstein, 1998; DuPaul and Stoner, 2003). In recent years more professionals from other countries, including the UK, have become involved in studies of aspects of ADHD (Lovey, 1999; Daniel and Cooper, 1999; Merrell and Tymms, 2001; Norwich, Cooper and Maras, 2002; Pester, 2002; Antrop *et al*., 2005; Lauth *et al*., 2006). Theoretically, ongoing controversies exist between biological, social and psychological perspectives concerning relationships between nature/nurture and their interactions in educational contexts (Cooper and Bilton, 2002). There have been recommendations for more research on ADHD to be undertaken in naturalistic school settings (British Psychological Society, 1996; DuPaul and Stoner, 2003; General Teaching Council (GTC) for England, 2004).

Current UK educational policy emphasises inclusive education (Department for Education and Skills (DfES), 2003, 2004a). Teachers in mainstream schools will be increasingly likely to experience involvement with pupils deemed to manifest symptoms of ADHD. The demands and delivery of the National Curriculum (NC), first introduced in the Education Reform Act (DES), 1988), and the more recent introduction of national literacy and numeracy strategies (DfEE), 1998, 1999a) present educational and social challenges to such children and their teachers.

Part 1 of the research offers breadth of study. It involves the first countywide ADHD survey covering all 273 schools in a local education authority in the West Midlands (LEA 1) in 2003. It focuses on the epidemiology of ADHD to establish the nature and incidence of the disorder from the perspective of schools. Data pertaining specifically to pupils at KS1/2 in 183 primary/first schools and 32 middle schools has been extracted from the 2003 survey data. This has been subjected to further descriptive analyses to obtain a more detailed appraisal of the reported incidence of the disorder.

Part 2 is based on in-depth individual case studies. The selected individual pupils studied are at KS1/2 and attend schools included in the 2003 survey. The school-based empirical study comprises two complementary research activities. The first focuses on the development of two classroom observation schedules, identified as Fixed Interval Sampling (FIS) and Instantaneous Time Sampling (ITS), and based on the ADHD

classification system published by the American Psychiatric Association (APA) in the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.), known as DSM-IV (APA, 1994). The second involves the collection of both descriptive data and unique individual quantitative information in six detailed case studies undertaken in mainstream schools across the LEA. Each case study has unique features. In the choice of schools attempts are made to demonstrate the specific (non-random) heterogeneity of school settings and to identify any variability in currently used identification and assessment procedures for Special Educational Needs (SEN) in general and ADHD in particular. Purposive sampling of individual pupils reflects differences in the manifestation of ADHD characteristics and co-existing conditions displayed in the school context. The two classroom observation schedules are used to observe the nature and frequency of ADHD symptoms manifest by each of six individual pupils who have either been diagnosed as having ADHD or who are in the process of assessment. Observations are used to explore in-depth the variability of ADHD symptoms:

(A) Initially (main phase):

(i) at a given point in time across different curricular contexts (FIS); and

(ii) at a given point in time across different curricular contexts *and* in relation to a paired non-ADHD pupil in the same class (ITS).

(B) Approximately one year later (follow up phase):

(i) at a given point in time across different curricular contexts (FIS); and

(ii) at a given point in time across different curricular contexts *and* in relation to a paired non-ADHD pupil in the same class (ITS).

(C) Over time, by analysing findings from (A) and (B) in each case study and also across all six case studies.

Variability is the prime focus of the present research in this controversial and complex field. Data gathered in both **Parts 1** and **2** contribute to the generation of hypotheses which have significance for features of inclusive educational practice, including multi-agency approaches and flexibility in delivery of the curriculum. These form part of the Government's ongoing reform of children's services set out in the Green Paper *Every Child Matters* (DfES, 2003). Where patterns of variability have emerged, questions are raised and hypotheses have been generated that can be tested by a range of methodologies.

Chapter 3

Review of Literature

3.1 Introduction

A comprehensive, continuing literature review is essential in any research, involving the selection of those sources most relevant to the research questions. The ongoing nature of the review has been particularly important in the present research, as a great deal continues to be written about the *"evolving concept"* of Attention Deficit Hyperactivity Disorder (ADHD) (British Psychological Society, 1996, p.8). Selected sources can be used to help devise a theoretical or analytical framework. They are also useful in identifying key issues and providing ideas for classifying and presenting data (Bell, 1999). There are various suggestions as to the definition and format of a literature review (Phillips and Pugh, 1998; Bell, 1999; Rudestam and Newton, 2001; Delamont, 2002; Gorard, 2004).

> *"Researchers use the scholarly literature in a study to present results of similar studies, to relate the present study to the ongoing dialogue in the literature, and to provide a framework for comparing results of a study with other studies"* (Creswell, 2003, p.46).

The literature review begins by describing the overall legislative framework in which the present research is set (section **3.2**). The section opens with an outline of the international context, before focusing on the UK context and the local perspective. The main focus is the concept of inclusive education, with reference made to Special Educational Needs (SEN) in general and ADHD in particular.

The next two sections focus on theory and ADHD and are inter-related. It is important to examine the theory on several levels including (A) the abstract concept of the disorder, (B) its manifestations in everyday life and (C) assessment procedures including rating scales and observation techniques. Section **3.3** begins with a detailed examination of general background features of the concept of ADHD, *"the central phenomenon being addressed"* (Creswell, 2003, p.45). Section **3.4** then highlights several current theoretical concerns about the more controversial aspects of the disorder.

Identification is made throughout the chapter of key issues for study and areas where there is a need for further research. These details are used in substantiating and generating research questions, hypotheses and areas of investigation in the present research.

3.2 Legislative framework

Any current research into special educational needs in general and ADHD in particular is underpinned by the concept of inclusive education. It is essential to take account of relevant background historical and contemporary legislation and guidance on the development of policy and practice. The particular aspects of inclusive practice which have relevance to the present research into ADHD are concerned with:

- multi-disciplinary approaches to identification and management; and
- classroom practice and curricular flexibility in schools.

3.2.1 International context

Inclusion

In 1994 delegates at the World Conference on Special Needs Education representing 92 governments and 25 international organisations drew up the Salamanca Statement which endorsed the issue of inclusion in education (United Nations Educational, Scientific and Cultural Organisation (UNESCO), 1994). The opening statement contains the following:

> *"Those with special educational needs must have access to regular schools which should accommodate them within a child-centred pedagogy capable of meeting these needs"* (UNESCO, 1994, para.2, p. viii).

The need for curriculum flexibility in schools is outlined, *"curricula should be adapted to children's needs, not vice versa"*, as is the need for a strengthening of multi-disciplinary planning and co-ordination (UNESCO, 1994, p.22). The importance of research and development and the broadening of access to information in the field of special needs education are also emphasised (UNESCO, 1994).

Two years later a special issue of the *Cambridge Journal of Education* published varying perspectives on inclusive education from different parts of the world, including Australia (Slee, 1996); New Zealand (Ballard, 1996); China (Chen, 1996); Norway (Vislie and Langfeldt, 1996); the US and the UK (Rouse and Florian, 1996); England (Booth, 1996) and the US (Udvari-Solner, 1996). Most concluded that there were many challenges to be overcome. Writing in 2003, Lindsay states that inclusion

> *" …is championed as a means to remove barriers, improve outcomes and remove discrimination.* (It) *is, however, a complex and contested concept and its manifestations in practice are many and various"* (p.3).

There have been calls for more research to be carried out to encourage the development of effective inclusive practices (Lindsay, 2003; Wedell, 2005). Ten years after the Salamanca Statement,

> *"Developments in thinking and practice in inclusion indicate that the issue is now at the heart of policy and planning in education throughout the world"* (Farrell, 2004, p.16).

Currently, most developed countries have a mix of special and mainstream schools but with variations in emphasis (Stewart, 2005). In countries such as Australia, Canada, Denmark, Italy, New Zealand, Norway, Portugal and Spain, *"the local community school is often seen as the normal setting for pupils seen as having special needs* (Ainscow *et al*., 2000, p.212). In some countries special schools have been closed almost overnight, whereas in the UK a more gradual approach to inclusion has led to special and mainstream schools still functioning alongside each other (Wolger, 2003). There has been international acknowledgement of the need for more professional development for teachers in relation to special educational needs and inclusive education (UNESCO, 1994; Tilstone, 2003; Idol, 2006; House of Commons, 2006).

ADHD

Based predominantly on information from two sources, Appendix **3.1** compares the legislative processes in the UK and the US, with particular emphasis on the school stages in the identification and assessment of ADHD (Cooper and Bilton, 2002; DuPaul and Stoner, 2003).

"No country has defined a specific category of special needs for children with ADHD" (Sava, 2000, p.153). It is recognised in many parts of the world that school staff should receive appropriate training in meeting the challenges of teaching such pupils (Barkley, 1998; Alban-Metcalfe and Alban-Metcalfe, 2001; DuPaul and Stoner, 2003). Recent research identifying the need for teacher education on ADHD includes studies from Greece (Poulou and Norwich, 2000; Kakouros *et al*., 2004), Australia (Kos *et al.*, 2004; Bekle, 2004; West *et al.*, 2005), Canada (Couture *et al.*, 2003) and the US (Vereb and DiPerna, 2004).

3.2.2 National context

In the UK there has been no specific mention of ADHD in the majority of government or Office for Standards in Education (OFSTED) publications to date. Recent guidance

for schools on data collection by type of special educational needs (SEN) suggests that pupils diagnosed with ADHD should be included in the category 'Behavioural, Emotional and Social Difficulty' (BESD) *"if additional or different educational arrangements are being made to support them"* (DfES, 2005b, p.8). It is therefore necessary to take account of literature and guidance focusing on inclusion of pupils with SEN and particularly those with BESD (also known as Emotional and Behavioural Difficulties or Social, Emotional and Behavioural Difficulties). While some reference is made to earlier publications, the majority of sources cited here date from the mid 1990s when awareness of ADHD began to be more widespread in the UK.

Inclusion

Under the 1981 Education Act (DES, 1981) which was fundamentally based on the recommendations of the Warnock report (DES, 1978), categories of need were replaced with the generic notion of special needs and there began a move towards integration of pupils with SEN into mainstream education. Subsequent legislation enshrined into law the general principle that children with SEN should normally be educated in mainstream schools (DfE, 1993, 1996; DfEE, 1997). The 1993 Education Act (DfE, 1993) required the issuing of a Code of Practice, which suggested a five-stage model for identification and assessment for LEAs and schools, with close multi-agency co-operation. The final stage involved a statutory assessment, possibly leading to the issuing of a Statement of Special Education Needs. This placed a statutory duty on the LEA to provide appropriate support for the individual pupil (DfE, 1994).

More recent legislation and guidance refers to 'the inclusion framework', within which schools and LEAs are expected to work (DfEE, 1999b; DfES, 2001a, 2001b, 2001c, 2003, 2004a). The *Special Educational Needs and Disability Act (SENDA)* (DfES, 2001c) introduced a new Code of Practice (DfES, 2001a) which superseded the 1994 Code. Following the Government's announcement in 1997 of its intention to reduce the number of pupils with Statements of SEN (Bowers, 2000), the new Code replaced the original five stages of assessment with three stages and included an increased emphasis on schools' curriculum responses to pupils' needs. An Audit Commission report highlighted a number of continuing challenges around inclusive practice (Audit Commission, 2002). Subsequent Government publications recognised a need for a radical change in the whole system of children's services and set out a national framework for change. The Government's proposals included increased emphasis on

early intervention, close multi-agency co-operation and the development of a flexible curriculum (DfES, 2003, 2004a). A report from OFSTED concluded that inclusion was not working effectively on a national basis. The report further stated: *"the admission of pupils with behavioural difficulties continues to be the hardest test of the inclusion framework"* (OFSTED, 2004, p.7). The White Paper *Higher Standards, Better Schools for All* (DfES, 2005a) made few references to special needs. It seems that problems caused by including pupils with SEN into mainstream schools may have been accorded a relatively low priority in practice.

There is currently uncertainty about the definition of inclusion and how to implement it (Farrell, 2004; House of Commons, 2006). Teachers are being encouraged to develop personalised learning for all pupils (DfES, 2004a; Miliband, 2004). The Government's strategy aims to

> *"make education more innovative and responsive to the diverse needs of individual children, so reducing our reliance on separate SEN structures and processes and raising achievement of the many children …who are considered to have SEN"* (DfES, 2004a, introduction).

Recent research into aspects of inclusive education has included examinations of the roles of the LEA (Ainscow *et al.*, 2000), school psychologists (Farrell, 2004) and teaching assistants (Groom and Rose, 2005; Farrell and Balshaw, 2002). Fletcher-Campbell (2001) has analysed research into groups of pupils, including pupils with SEN, who are "*at risk of being denied the opportunity to experience the 'normality' of the curriculum offered in schools in England and Wales"* (p.69). In their study of comprehensive schools, Clark *et al.* (1999) concluded *"the move towards inclusive schooling is likely to be more problematic and more complex than we have supposed"* (p.157). Baroness Warnock, *"the architect of inclusion"* (Stewart, 2005, p.16), is among those who now believe that inclusion is not always appropriate for some pupils, particularly those with emotional and behavioural problems (Lightfoot, 2005; House of Commons, 2006).

There is an increasing awareness of the need for alternative approaches to inclusion, which require a thorough review of policies and practices in education, together with significant changes in the use of available resources (Ainscow *et al.*, 2000; House of Commons, 2006; Macbeath *et al*., 2006). The role of the teaching assistant is seen as crucial in the effective inclusion of pupils with social, emotional and behavioural

difficulties (SEBD) (Groom and Rose, 2005). In calling for curricular reform, Wedell (2005) stresses the need for collaborative practices and flexibility in teaching-learning approaches, pupil grouping and location of learning.

ADHD

In the UK schools are under pressure to raise academic standards whilst at the same time taking forward the inclusion agenda (Farrell and Ainscow, 2002; Macbeath *et al*., 2006). Innovations over recent years including Local Management of Schools (LMS), the National Curriculum, examination league tables, parental choice and OFSTED inspections can be problematic in the provision of inclusive education for pupils with ADHD. First introduced in the Education Reform Act (DES, 1988), the demands of the National Curriculum and Standard Assessment Tasks (SATs) present particular challenges for children with ADHD and their teachers. Recent developments such as literacy and numeracy hours *"reduce the pedagogical flexibility available to teachers"* (Cooper and Bilton, 2002, p.93).

"By no means all children diagnosed as having ADHD have a Statement of special educational needs" (Alban-Metcalfe and Alban-Metcalfe, 2001, p.5). In recent years there have been suggestions for the development of effective inclusive classrooms in the UK for pupils displaying ADHD characteristics including recommendations for school-based interventions and strategies designed to support such pupils (Alban-Metcalfe and Alban-Metcalfe, 2001; Cooper and Bilton, 2002; Cooper, 2005, 2006). One of the most important features highlighted is the "*need for curriculum implementation and organizational arrangements that are more geared to pupil learning styles"* (Cooper, 2005, p.133). The findings from **Part 2** of the present research have identified settings and contexts which may lead to higher attainment in pupils with ADHD. This information could be useful in developing more inclusive classroom practice.

There have been calls in the UK for teacher education on ADHD at both the initial training stage and as part of in-service training and continuing professional development so that they may be more able to meet the needs of pupils with ADHD (Maras and Redmayne, 1997; Lovey, 1999; Overmeyer and Taylor, 1999; Cooper and Bilton, 2002; Kirby *et al.*, 2005). There is as yet little evidence nationally of increases in relevant training for teachers and teaching assistants (Macbeath *et al*., 2006; Stewart, 2006).

3.2.3 LEA context

Inclusion

The process of statutory assessment and statementing, mentioned in the previous section, has presented bureaucratic challenges and debate and has become a funding issue (DfE, 1994; DfES, 2001a). In the absence of any national criteria, the requirements of *The Special Educational Needs and Disability Act (SENDA)* (DfES, 2001c) have been interpreted differently in LEAs in different parts of the country and levels and allocation of resources have varied.

A study in 12 LEAs found differences of opinion regarding inclusive policies and funding arrangements were seen by some LEAs as major barriers to progress towards inclusion. Some LEAs offered training for classroom assistants, with some providing training for teachers to enable them to work more effectively with another adult in the classroom (Ainscow *et al*., 2000). The authors identified the need for

> *"a fundamental push towards school reform, such that overall organisational arrangements, curricula, assessment and pedagogy are developed in response to the learning characteristics of all members of the school* (p.224).

Recent government guidance on the provision of inclusive education pledges to *"deliver practical teaching and learning resources to raise the achievement of children with SEN…"* (DfES, 2004a, p.50). Some of the responsibility has been transferred from local authority level to schools (DfES, 2003, 2004a).

> *"Even supporters of inclusion believe greater school autonomy and a changed role for local authorities is likely to lead to fewer resources"* (Bloom and Stewart, 2005, p.16).

ADHD

Several years ago, Kewley (1999) suggested that

> *"most LEAs now have a policy on ADHD which, in many LEAs, is being integrated as a county-wide policy in conjunction with other agencies"* (p.156).

This may not be the case in all local authorities across the UK. **Part 2** of the present research includes an examination of the variability in multi-professional approaches to identification and assessment of ADHD in eight schools within an LEA. The findings from the survey in **Part 1** have been used to inform ADHD policy decisions within an LEA and have also identified school training needs in the LEA. Several other LEAs

have conducted similar school surveys (Ramsden, 1998; Cains, 2000; Holowenko and Pashute, 2000; Evans, 2004).

3.3 ADHD – theoretical concept

3.3.1 Definition and diagnosis of ADHD

Definition

"Despite an increasing and enormous volume of research literature, the precise definition of ADHD continues to be debated" (Goldstein and Goldstein, 1998, p.6). *"Not an all or nothing condition"* (Alban-Metcalfe and Alban-Metcalfe, 2001, p.5), most agree that it is a medical disorder. Among the suggestions for a definition are: *"a neurobehavioural developmental disorder"* (Ahonen *et al*., 1994, p.168); *"a medical diagnosis of a behavioural condition"* (Holowenko, 1999, p.14); *"a disorder with an underlying biological cause"* (Munden and Arcelus, 1999, p.9); *"a complex neurodevelopmental constellation of problems rather than a single disorder"* (Zwi *et al*., 2000, p.975); *"an internationally recognised medical condition of brain dysfunction"* (Kewley, 2005, p.11); and *"a neurologically based but environmentally driven condition"* (Goldstein, 2006, p.463). Professional opinion is often polarised, leading to disagreements between psychologists and educationalists, for example, as to the best course of treatment (Baldwin and Cooper, 2000).

ADHD is defined by the existence of three core characteristics of inattention, impulsivity and hyperactivity, (the *"holy trinity"* of ADHD, according to Barkley, 1998, p.57). Inattention is observed in behaviours such as seeming not to listen and failing to complete tasks (Kendall, 2000). *"Excessive impulsiveness means that the child acts, speaks or has an excessive emotional reaction without thinking"* (Kewley, 2005, p.14). Hyperactivity refers to excessive or developmentally inappropriate levels of activity, whether motor or vocal (Barkley, 1998). These movements, often irrelevant to the task, have been described by Holowenko (1999) as *"knee-jiggling, toe-tapping hyperactivity"* (p.14). The diagnosis should not be made without some or all of these essential features being manifest on more than one occasion (APA, 1994; Kewley, 1999).

Diagnosis

Diagnosis is made by a qualified clinician using one of two sets of diagnostic criteria currently in use. Traditionally in Europe and the UK the *International Classification of Diseases* (ICD-10), which refers to 'Hyperkinetic Disorder' (HKD) rather than ADHD, has been the preferred classification system (Appendix **3.2**) (World Health Organisation (WHO), 1990). In recent years there has been more use of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV) system which is widely used in the USA, Australia and other countries (Appendix **3.3**) (APA, 1994). In the DSM-IV system the behavioural characteristics associated with ADHD do not represent three primary symptoms but two, with hyperactivity forming a single symptom group with impulsivity (Anastopoulos *et al.*, 1997). This system is capable of identifying three main subtypes of ADHD: the predominantly inattentive type, the predominantly hyperactive-impulsive type and the combined type (APA, 1994).

A rigorous assessment is based on the child's past medical history, educational history, family history, physical examination and information from other professionals, including teachers and educational psychologists. Approaches used include observation of the child, both in the clinic setting and the school environment; in-depth interviews of the child, parents and teachers; the completion of behavioural rating scales; aptitude testing and physiological and neurological testing (Munden and Arcelus, 1999; Cooper and Bilton, 2002; Kewley, 2005).

3.3.2 History and changes in terminology

As early as 1846, Heinrich Hoffman, a German physician, included an illustrated story entitled 'Fidgety Philip' in a children's book *Struwwelpeter* in which typical symptoms associated with ADHD were described in detail (Hallowell and Ratey, 1996; Dobson, 2004) (see Appendix **3.4**). One of the first discussions of the disorder was probably in 1902 when George Still, a British paediatrician,

> *"…reported, in **'The Lancet'**, on a group of children whose behaviour was characterised by a tendency to be 'passionate, deviant, spiteful and lacking in inhibitory volition.' … Still hypothesised mild brain injury as the cause."* (Cooper and Bilton, 2002, p.22).

In the 1930s, behavioural disturbances were related to brain injury and in 1937 stimulant medication (amphetamine) was first used to treat a group of behaviourally disordered children (Munden and Arcelus, 1999). It was in the 1950s and 1960s that the term 'Minimal Brain Dysfunction' was used, with the disorder no longer ascribed to

brain damage, but focusing more on brain mechanisms. Methylphenidate (Ritalin), introduced in 1957, began to be more widely used, particularly in the USA. During the 1960s the 'Hyperactive Child Syndrome' became a popular label (BPS, 1996; Anastopoulos *et al*., 1997; Green and Chee, 1997; Sandberg and Barton, 2002).

> *"Attitudes regarding the nature of the disorder are reflected in the various name changes that the syndrome has undergone over the years"* (Quinn, 1997, p.x).

Research in the 1970s suggested that attention and not hyperactivity was the key feature in this disorder and led to the establishment of 'Attention Deficit Disorder' (ADD) as a category in the third edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM III) published by the American Psychiatric Association in 1980. There have since been several reformulations of DSM, with the category of Attention Deficit Hyperactivity Disorder (ADHD) first used in 1987 and redefined in 1994 (BPS, 1996; Anastopoulos *et al.,* 1997). Holowenko (1999) writes:

> *"In our lifetime it is likely that the diagnostic label will change again. There are many who argue for example that we should call this condition Behavioural Inhibition Disorder (BID) …"* (p.14).

In Sweden and other Scandinavian countries the acronym DAMP (Deficits in Attention, Motor control and Perception) has been frequently used as a diagnosis. DAMP is a combination of ADHD plus DCD (Developmental Co-ordination Disorder, present in 50% of ADHD cases) (Gillberg, 2002). There is now a tendency to use DAMP and ADHD as more or less identical in terms of their symptoms. Sometimes the combined expression ADHD/DAMP is used (Gillberg, 2002; Hjörne and Säljö, 2004).

3.3.3 Aetiology

There is no one single 'cause' of ADHD (Kendall, 2000; DuPaul and Stoner, 2003). It is believed that ADHD is caused primarily by neurological dysfunction. Research studies into ADHD have found particularly low levels of activity in the neurotransmitters in the frontal lobes of the brain which control impulses and regulate the direction of attention. The causes of this particular brain dysfunction in most cases appear to be genetic, with approximately 70% of cases being inherited. Environmental factors such as brain disease, brain injury or toxin exposure may be the cause of 20 to 30% of cases (Cooper and Bilton, 2002). Other suggested risk factors for ADHD include pregnancy and delivery complications, prematurity leading to low birthweight, and foetal exposure to alcohol and cigarettes (Biederman and Faraone, 2005). Most children diagnosed with

ADHD have a close relative (usually male) affected to some degree by the same problem. In studies of identical twins, both have ADHD in almost 90% of cases, and siblings carry a 30 – 40% risk of inheriting the disorder (Green and Chee, 1997; Kewley, 2005).

> *"Hypotheses about the cause of ADHD have evolved from simple one-cause theories to the view that it is a complex, multifactorial disorder caused by the confluence of many different types of risk factors"* (Biederman and Faraone, 2005, p.243).

When seeking to explain the multi-factorial causes of ADHD, Munden and Arcelus (1999) refer to the interrelationship between *nature* and *nurture*. They state that *"ADHD is a classic example of a bio-psycho-social disorder"* (p.51), a term used by many others to describe the concept (British Psychological Society, 2000a; Alban-Metcalfe and Alban-Metcalfe, 2001; Cooper and O'Regan, 2001; Cooper and Bilton, 2002; Cooper, 2005). This means it is viewed as

> *"a problem which has a biological element, but that interacts with psychosocial factors in the individual's social, cultural and physical environment"* (Cooper, 2006, p.255).

Biological factors include genetic influences and brain functions; psychological factors include cognitive and emotional processes and social factors include parental child-rearing practices and classroom management (BPS, 2000a). *"Different causal factors may pertain to diverging subgroups of ADHD children"* (Hinshaw, 1994, p.57).

3.3.4 Prevalence

Although figures vary according to where and when studies are carried out and the diagnostic criteria used, it appears that ADHD is present throughout the world.

> *"Internationally, prevalence rates are conservatively estimated at between 3% and 6% among children from a wide variety of cultures and geographical regions"* (Cooper, 1999, p.3).

More recent international estimates suggest that between 4% and 10% (Chamberlain and Sahakian, 2006) or 8% and 12% of children worldwide are affected by ADHD (Biederman and Faraone, 2005). Timimi cites more extreme estimates ranging from 0.5% - 26% of children (Timimi and Taylor, 2004). Symptoms emerge more clearly between the ages 6 and 9 (Arcelus *et al*., 2000). The disorder is considered to be more prevalent in the age range 6 to 11 years (Buitelaar, 2002) with a reduction in prevalence with maturation (Holowenko and Pashute, 2000).

Estimates for different countries vary. Goldstein and Goldstein (1998) suggest 1% – 6% of school age children in the US with a diagnosis. Others estimate approximately 3% – 7% (Barkley, 1998; DuPaul and Stoner, 2003) or up to 7% of US children (Cooper and Bilton, 2002; Gottlieb, 2002) with ADHD. Some US schools show *"rates as high as 17 per cent"* (Chamberlain and Sahakian, 2006, p.35). American data collected in 2003 suggests

> *"incidence rates varied significantly from a low of approximately 5% to a high of 8% in children ages 4 to 17 years old"* (Goldstein, 2006, p.461).

In the UK it is difficult to ascertain accurate *national* figures. The breakdown of SEN figures provided in government statistics does not include a discrete category for ADHD. Maras and Redmayne (1997) suggest that although it is not clear how many pupils currently have a diagnosis of ADHD, the incidence is increasing. Figures published by the National Institute for Clinical Excellence (NICE) (2000) state that:

> *"It has been estimated that approximately 1% of school-aged children (about 69,000 6-16 year olds in England and 4,200 in Wales) meet the diagnostic criteria for HKD (i.e. severe combined-type ADHD). The estimated prevalence of all ADHD is considerably higher, around 5% of school-aged children (345,000 in England and 21,000 in Wales)"* (p.3).

On average, this means that in a mainstream class of 30 children it is likely that at least one child will have ADHD (Cooper and Bilton, 2002). Distribution is not even, with some schools having a disproportionate number of pupils displaying ADHD-type characteristics (Cooper and O'Regan, 2001). Several LEAs in the UK have carried out questionnaire surveys to ascertain details of the local incidence of all school pupils diagnosed with ADHD (Ramsden, 1998; Cains, 2000; Holowenko and Pashute, 2000; Evans, 2004). A similar school survey has been undertaken in an LEA in **Part 1** of the present research.

Estimates of gender differences vary. Boys tend to outnumber girls (Munden and Arcelus, 1999; Biederman and Faraone, 2005). Male-to-female ratios range from 4:1 to 9:1, depending on the setting (i.e. general population or clinics) (APA, 1994). Studies in the US have shown that

> *"Boys are three times more likely to have ADHD than girls and six to nine times more likely than girls to be seen with ADHD among clinic-referred children"* (Barkley, 1998, p.86).

UK figures vary between 9:1 and 3:1 (up to 9:1, Kewley, 1999; 4:1, Cooper and O'Regan, 2001; 6:1 – 3:1, Alban-Metcalfe and Alban-Metcalfe, 2001). A boy:girl ratio of 12:1 was found in a recent study in a clinic population in the Wirral (Parr *et al*., 2003). **Part 1** of the present research examines gender ratios in an LEA and across four further LEAs.

Incidence estimates depend significantly on which ADHD subtypes are included. Boys outnumber girls by 4:1 in the hyperactive-impulsive/mixed type groups, but boys and girls are represented in about equal numbers in the non-hyperactive (mainly inattentive) type (Cooper and O'Regan, 2001). The prevalence of hyperkinetic disorder (severe hyperactivity) in children is estimated at 0.5 – 1% (Taylor and Hemsley, 1995; Kewley, 1999).

ADHD occurs across social and cultural boundaries (Remschmidt, 2005; Cooper, 2006) and in all ethnic groups (Selikowitz, 2004). Ahonen *et al*. (1994) refer to cross-national evidence which indicates that there is no basis for attributing this syndrome to distinctive cultural practices, whereas Leung *et al*. (1996) suggest the possibility that some aspects of the disorder are culture-bound. Alban-Metcalfe *et al*. (2002) claim that socio-cultural factors appear to affect prevalence, although this has not been tested adequately. Differences have been reported in prevalence according to socioeconomic status, with *"a somewhat greater frequency of children with ADHD from the lower social classes"* (Kendall, 2000).

3.3.5 Comorbidity and associated problems

Comorbidity is the simultaneous existence of two or more different conditions or disorders. Most studies suggest that approximately 60% to 70% of children with ADHD have comorbid or co-existing conditions of various types. These co-existing conditions may add to the significant social, emotional and educational problems experienced by a child with ADHD. They may include disruptive behaviour disorders such as Oppositional Defiant Disorder (ODD) and Conduct Disorder (CD); learning difficulties, dyslexia, speech and language disorders, dyspraxia and dyscalculia; depression and anxiety; Obsessive Compulsive Disorder (OCD), tics and Tourette's syndrome (Munden and Arcelus, 1999; Pliszka *et al*., 1999; Alban-Metcalfe and Alban-Metcalfe, 2001; Cooper and Bilton, 2002; Selikowitz, 2004). There are also suggestions

of comorbidity with Autistic Spectrum Disorders (ASD) (Santosh, 2004), including Asperger's syndrome (Pliszka *et al*., 1999; Selikowitz, 2004; Kewley, 2005).

Research has been carried out particularly into the comorbidity of ADHD with dyslexia (for example, in the UK by Richards, 1997; and in Norway by Knivsberg *et al*., 1999). Dewar (2001) has reported on The Dyslexia, Dyspraxia and Attention Disorder Treatment centre (DDAT) which has recently been set up to carry out research into controversial treatment *"to help students overcome difficulties associated with dyslexia, dyspraxia and ADD"* (p.30). The field is complex conceptually and highly controversial (see Nicholson and Reynolds; 2003; Rack, 2003; Reynolds *et al*., 2003; Snowling and Hulme, 2003; Whiteley and Pope, 2003).

There are references in the literature to poor self-esteem amongst pupils with a diagnosis of ADHD (Green and Chee, 1997; Cooper and Shea, 1999; Alban-Metcalfe and Alban-Metcalfe, 2001; Cooper and Bilton, 2002),

> *"… for most, their self-esteem usually starts to decrease during the early school years, as they start to underachieve academically and socially"* (Kewley, 1999, p. 54).

Other problems common in children with ADHD include fine motor control and handwriting difficulties (Harris, 2004; Kewley, 2005); sleep difficulties; self-regulation of emotion (Barkley, 1998); sense of time (Houghton, 2004a); time management and organisational problems; over-sensitivity (Kewley, 1999, 2005); and problems with relationships (Barkley, 1998; Cooper and Bilton, 2002; DuPaul and Stoner, 2003; Brown, 2004). Over 50% of children with ADHD display emotional problems and the same number display social skills problems (Munden and Arcelus, 1999; Cooper and Bilton, 2002).

3.3.6 Prognosis

Pupils with ADHD may experience difficulties with the transition from primary to secondary school, with increased emphasis placed on children's abilities to be self organised and autonomous, both in their learning and social behaviour. They may also have problems with the narrowing of the curriculum in the secondary school setting where more use is made of abstract and analytical learning approaches (BPS, 2000a). *"Children with SEN are significantly over-represented in national statistics for poor attendance and exclusion"* (OFSTED, 2004, p.17). Those pupils who display ADHD

characteristics may be more likely than their non-ADHD peers to be excluded from school for behaviour reasons (Cooper and O'Regan, 2001). A recent study focusing on pupils permanently excluded from mainstream education found that

> *"nearly half of the children attending the behavioural support unit for primary education had symptoms of ADHD … the number of hyperactive children from secondary education was significantly lower"* (Arcelus *et al.,* 2000, p.85).

For many years it was assumed that ADHD *"disappears at puberty"* (Kewley, 1999, p.65) and that children with ADHD would 'outgrow' behaviour difficulties associated with the disorder upon reaching adolescence or early adulthood. Longitudinal investigations show that 70% to 80% of children continue to exhibit significant deficits in attention and impulsivity compared to their adolescent peers (Barkley, 1998; Kewley, 1999; DuPaul and Stoner, 2003). Symptoms in teenagers *"may be different because of maturational and cognitive development"* (Resnick, 2005, p.530). There is a need for more individualised treatments to take account of differing characteristics displayed by adolescents.

> *"The most salient concerns of hyperactive adolescents and young adults do not centre upon core symptoms, but on global patterns of educational, occupational and interpersonal maladjustment"* (Olson, 2002, p. 27).

There are suggestions that between 30% and 70% of people carry some or all of the ADHD traits into adulthood (Cooper and Bilton, 2002; Cooper, 2006). Others claim that over 50% continue to evidence symptoms of the disorder as adults (Green and Chee, 1997; Holowenko, 1999; Chamberlain and Sahakian, 2006). A small US study into the adult outcome of child and adolescent ADHD carried out in a primary setting found that of the 73 participants, only 4 (5.5%) had retained ADHD into adulthood, meeting the full DSM-IV criteria for the disorder (McCormick, 2004).

The majority of those who continue to display symptoms of the disorder into adulthood no longer meet the formal DSM diagnosis criteria for the disorder. The frequency and intensity of their symptoms decline. There is a lessening of impulsive behaviours, although the learning and organisational problems may persist (Green and Chee, 1997; Barkley, 1998; DuPaul and Stoner, 2003). *"Although there cannot be an adult* ***onset*** *of ADHD, quite commonly the diagnosis is not made until adulthood"* (Resnick, 2005, p.530). Green and Chee (1997) claim that adult ADHD was first recognised when paediatricians became aware that some of the parents of children in their care had the same symptoms as their children. Those in whom the condition persists into adulthood

are likely to suffer from anti-social, self-destructive tendencies and experience difficulties with emotional and social problems, unemployment, criminality and substance abuse, other mental illnesses and increased accident rates (BPS, 2000a; Chamberlain and Sahakian, 2006).

Only a few specialist clinics for adults with ADHD currently exist in the UK (Chamberlain and Sahakian, 2006). If their ADHD is adequately treated, it should be possible for them to find a career and lifestyle in which they flourish (Munden and Arcelus, 1999). Features of ADHD such as creativity and high energy levels can be advantageous in adult working life (Weinstein, 2003). Several adults with a diagnosis of ADHD have provided first-hand experiences of the disorder by presenting conference papers and publishing books on the subject (Maté, 1999, 2002; Weinstein, 2003; Mills, 2004; Richardson, 2004).

3.3.7 Interventions

The heterogeneity in characteristics and symptoms displayed by pupils diagnosed with ADHD and the variability of their response to treatment means that it is often difficult to decide on the most effective interventions for each individual. There are several types of intervention currently used to treat pupils with ADHD who may experience difficulties in both the cognitive and affective domains.

> *"Research … indicates that a multimodal treatment protocol is more effective that unimodal treatment in addressing the myriad of difficulties associated with this disorder"* (DuPaul and Weyandt, 2006, p.342).

i) Medical interventions

Stimulant medications have been found to have positive effects on attention span, impulse control, academic performance and social relationships (DuPaul and Stoner, 2003). By affecting the balance of nonadrenaline and dopamine in the brain, the aim of medication is to control symptoms so that the child is more receptive to other forms of non-medical interventions. *"Medication alone is an insufficient treatment to extinguish undesirable behaviour in children with ADHD"* (Daniel and Cooper, 1999, p.218). Medication

> *"…can be seen to provide a 'window of opportunity' for the child to benefit from teaching-learning experiences provided by teachers, parents and others"* (Alban-Metcalfe and Alban-Metcalfe, 2001, p.89).

Psychostimulant medications such as methylphenidate (Ritalin), dexamphetamine (Dexedrine) and mixed amphetamine (Adderall) are used to increase the arousal of the central nervous system (CNS) (DuPaul and Stoner, 2003). Pemoline (Cylert) has been less frequently used partly due to concerns associated with liver failure (Cooper and Bilton, 2002). The original forms of psychostimulant are short-acting and administered two or three times daily. Sustained release versions of methylphenidate (Concerta) and dexamphetamine are now available and are becoming the preferred form for treating most children with ADHD (DuPaul and Stoner, 2003).

Other types of medication have been used successfully in treating ADHD. These include tricyclic antidepressant medications such as imipramine (Tofranil) and desipramine (Norpramine) (Cooper and Bilton, 2002). Non-stimulant medications such as atomoxetine (Strattera), buproprion (Wellbutrin) and clonidine (Catapres) have also proved effective in the treatment of ADHD (DuPaul and Weyandt, 2006).

In the US, 90% of children diagnosed with ADHD receive medication therapy. The vast majority, approximately 1.5 million children (more than 4% of the school age population) are treated with psychostimulant medications. The average duration of medication use is between 2 and 7 years (Cooper and Bilton, 2002; DuPaul and Stoner, 2003). In the UK, it is estimated that approximately 20% of children with ADHD receive medication (Cooper and Bilton, 2002). Several small surveys undertaken by LEAs in England have established local figures for numbers of schoolchildren receiving medication (Ramsden, 1998; Cains, 2000; Holowenko and Pashute, 2000; Evans, 2004). The survey in **Part 1** of the present research makes comparisons with four other LEAs with regard to the numbers of pupils prescribed medication.

It is important that the correct dose of medication is prescribed and that regular reviews take place to monitor dosage and timing and to consider any side effects. Effective co-operation between education and health professionals is crucial in monitoring the positive and negative effects of medication (Goldstein and Jones, 1998; DuPaul and Stoner, 2003). Controversy over the use of medication is discussed in section **3.4.4**.

ii) Educational interventions

Classroom interventions

Many of the educational and environmental interventions and classroom management strategies already in place in some schools may be differentially appropriate for pupils who display ADHD characteristics. There have been numerous suggestions for classroom strategies for use with pupils diagnosed with ADHD (Hallowell and Ratey, 1996; Goldstein and Jones, 1998; Kewley, 1999, 2005; Cooper and O'Regan, 2001; Cooper and Bilton, 2002; Spohrer, 2002; DuPaul and Stoner, 2003; Cooper, 2005; DuPaul and Weyandt, 2006). Goldstein and Jones (1998) suggest three broad features that are critical in working with such children: brevity, variety and structure/routine.

Physical exercise in school

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). In a recent study, the 'on-task' behaviour of pupils with EBD in a mainstream secondary school showed improvements following PE lessons (Medcalf *et al*., 2006). The inclusion of periods of structured physical activity at regular intervals throughout the school day could produce positive outcomes for pupils with ADHD (Cooper, 2005).

Nurture groups

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 (Cooper and Lovey, 1999; Bennathan and Boxall, 2000; Cooper and Bilton, 2002; Howes *et al.*, 2002; Colwell and O'Connor, 2003). There is evidence that some pupils 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. There is a predictable daily routine, which includes a holistic curriculum, intensive interaction, free play periods and periods of structured physical activity (Cooper, 2004). A typical nurture group consists of 10 – 12 pupils, a teacher and a teaching assistant (TA). The pupils remain on the roll of a mainstream class, spending curriculum time in this class when not attending the nurture group. The pupils are usually re-integrated full-time into their mainstream classes after a period of between two and four terms (Cooper and Tiknaz, 2005).

There has been limited research into the effectiveness of nurture groups. This includes discussion of opportunity cost (Howes *et al.,* 2002) and opportunity gain (Cooper and Tiknaz, 2005), as well as considerations such as cost effectiveness (Cooper, 2004); communication between nurture group and mainstream staff (Cooper and Tiknaz, 2005); parents' attitudes towards their own children and the school; and the effects on whole schools (Cooper *et al.*, 2001). Some of the findings so far can be identified as providing benefits to pupils with ADHD, although there are concerns that *"behavioural gains transfer less effectively to mainstream settings"* (Cooper and Bilton, 2002, p.71).

iii) Social interventions

Children with ADHD often have poor social skills, finding difficulty in initiating and maintaining friendships. They appear unaware of how their behaviour affects other people. They are said to suffer from social ineptness (Brown, 2002, 2004) or social clumsiness (Green and Chee, 1997). Children with ADHD may try to join in a game without asking permission. They do not follow the rules of good conversation, are likely to interrupt others and are more likely than their non-ADHD peers to react aggressively. Consequently they may suffer from peer-rejection or isolation (DuPaul and Stoner, 2003). There is a need for the teaching of basic social interaction skills to children with ADHD. This may be accomplished at home by parents, in school, and through voluntary agencies such as *"a football coach or guide leader, who understands the nature of ADHD …"* (Munden and Arcelus, 1999, p.82). Antshel (2005) suggests pre-school training in social skills for pupils with ADHD alongside *"typically developing peers"* in order to *"help foster improved social functioning"* from an early age (p.3).

The need for an affective curriculum has been stressed as children with ADHD often experience significant difficulties in this domain (DES, 1989; Ahonen *et al*., 1994; Hanko, 2003). Cooper and Bilton (2002) also stress the importance of "*self-advocacy skills":*

> *"It is important for children not to be made to feel ashamed or guilty for their lapses in concentration, and to have the confidence to (for example) approach the teacher and ask for a point to be restated or the homework task to be repeated/explained one more time"* (p.26).

iv) Alternative/complementary interventions

Alternative and complementary treatments are often used in children with ADHD, but reported effectiveness is variable (Sinha and Efron, 2005). Many interventions are controversial, *"have minimal or no established efficacy for children with ADHD"* and lack sufficient research evidence (DuPaul and Stoner, 2003, p.238). There is not room here to discuss the relative merits or otherwise of every suggested treatment. Brief details are provided of one intervention, the use of fish oil supplements, which has recently been reported in the UK. There follows a list of other suggested treatments, the majority of which are open to debate as to effectiveness.

Fish oil supplements

In conjunction with Oxford University, Durham LEA have been involved in trials in schools using fish oil supplements with school children with developmental co-ordination disorder (Hall, 2005; Richardson and Montgomery, 2005). Findings suggest improvements in behaviour, reading and writing after three months. Teacher-rated ADHD related symptom scores using the Conners Teacher rating scales also showed improvements (Conners, 1997). A similar UK study in a school for boys aged 8 – 17 with severe emotional and behavioural difficulties indicates reductions in ADHD characteristics following the use of fish oil supplement as part of a healthy eating programme (*Special*, 2007).

Other treatments

The following list of other suggested interventions has been compiled with reference to several sources (Green and Chee, 1997; Kinder, 1999a, 1999b; Cooper and Bilton, 2002; Spohrer, 2002; Jensen and Kenny, 2004; Jacobs *et al*., 2005; Sinha and Efron, 2005).

- Amino acid supplementation
- Brain Gym
- Chiropractics
- Cognitive behaviour therapy
- Developmental optometry – eye exercises
- Diet – includes the adverse effects of food additives, food intolerance, deficiencies, allergies, the Feingold diet and dietary supplements
- Herbal or natural medicines

- Holistic approaches including acupuncture, aromatherapy, colour therapy, homeopathy, osteopathy, reflexology
- Multivitamins and zinc
- Play therapy and outdoor play in green places.
- Tinted lenses
- Yoga

3.4 ADHD – current theoretical concerns

Since the DSM-IV formulation of the disorder known as ADHD was re-defined in 1994 (APA, 1994), many theoretical aspects concerning the concept of ADHD have been and continue to be surrounded by controversy and debate.

> *"There appears to be little firm agreement on almost any aspect of the disorder; its prevalence, its symptoms, its consequences, its treatment, its boundaries, its aetiology, its longevity, or its constituency"* (Tait, 2005, p.36).

There are several related issues which may contribute towards difficulties in the provision of appropriate learning and behavioural support in inclusive education for pupils who display ADHD characteristics. Some of the most widely disputed aspects, often the subject of sensational stories in the media, are highlighted in the following five sections.

3.4.1 The existence of ADHD

The most fundamental debate has centred on the 'reality' (Maras and Redmayne, 1997) or the existence of the disorder (Barkley, 1998; Kewley, 1999; Zwi *et al.*, 2000; Timimi *et al*., 2004; Biederman and Faraone, 2005; Remschmidt, 2005).

> *"Some critics have questioned whether ADHD is a legitimate diagnosis. They suggest that children who are labeled ADHD are actually normal children whose parents and teachers are intolerant of behavioural variations"* (Westby and Watson, 2004, p.241).

Cooper and Bilton (2002) summarise some of the grounds put forward by those who are either strongly 'for' or 'against' the concept of ADHD. Those against claim that it is one or more of the following:

- *"an American fad or scientifically dubious concept;*
- *an attempt to hide the true causes of psycho-social disorders…;*

- *an excuse for poor parenting and ineffective schools;*
- *a convenient excuse by parents to gain access to scarce resources …;*
- *an excuse to control and suppress the natural exuberance and spontaneity of creative and independent children through the use of powerful drugs"* (p.85).

Those in favour of the existence of ADHD sometimes see it as:

- *"underlying nearly all failures of personal motivation and disorganised behaviour;*
- *an explanation of all aspects of an individual's social, educational and professional failure;*
- *the single factor at the basis of school failure and criminal behaviour;*
- *an indicator of superior attributes which make the bearer the member of an exclusive club;*
- *conclusive proof of the inaccuracy of environmental explanations for school failure and behavioural problems…"* (p.85).

Currently, many disciplines accept the existence of ADHD. One of the foremost amongst those in the US who argue for its existence is Professor Russell Barkley (1998, 2005). He took the unprecedented step of issuing an '*International Consensus Statement on ADHD'* in which he and 74 prominent medical doctors and researchers confirmed the status of the scientific findings concerning the validity of the disorder (Barkley *et al.*, 2002). This immediately stimulated additional debate (Jureidini, 2002) and led to Timimi and 33 co-endorsers publishing a '*Critique of the International Consensus Statement on ADHD'* (Timimi *et al*., 2004). This has been followed by further ongoing dialogue (Barkley and 20 co-endorsers, 2004; Timimi *et al.,* 2004; Tait, 2005; Timimi, 2005).

There are differing views as to the core symptoms and definitions of the features of the disorder. For example, in discussing attention, Barkley (1998) states

> *"attention is a multidimensional construct that can refer to alertness, arousal, selectivity, sustained attention, distractibility or span of apprehension, among others"* (p.57).

Robertson (2003) identifies three varieties of attentional control: "*vigilant attention … selective attention and attentional switching."* He claims *"children with ADHD have specific problems with vigilant attention"* (p.478). This claim is disputed by Wilding

(2004) who suggests that further research is required. The characteristic of impulse control, often known as impulsiveness or behavioural disinhibition is also described as multi-dimensional (Barkley, 1998). Kewley (1999, 2005) subdivides this category into 'physical impulsiveness', 'verbal impulsiveness' and 'emotional impulsiveness'.

There are suggestions that the condition is under-diagnosed (Cosgrove, 1997; Kewley, 1998, 1999; Lovey, 1999; Holowenko and Pashute, 2000; Alban-Metcalfe and Alban-Metcalfe, 2001), under-treated (Kewley, 1998; NICE, 2000; Coghill and Markovitch, 2004; Timimi and Taylor, 2004) or over-diagnosed (Leech, 2004; Timimi, 2005).

Far from being a 21st century illness (Walsh, 2003) or an invention of modern western culture (Timimi, 2005), ADHD may have existed in some form or another since at least as far back as the nineteenth century (see section **3.3.2)**. *"The existence of ADHD is now well beyond debate"* (Kewley, 2005, p.86). Details in Appendix **2.1** demonstrate the increasing numbers of Internet references to ADHD in the UK (including the DfES website) and worldwide. The increase in parent support groups has *"dramatically changed the acceptance, understanding and treatment of ADHD in Australia, the UK and North America"* (Green and Chee, 1997, p.202). An extract from a recent case study suggests that ADHD can almost be regarded in the US as a status symbol:

> *"Having ADHD has become more socially acceptable over time and … in some parts of the USA parents are now actively seeking ADHD diagnoses for their children because it is regarded as 'trendy'"* (Chamberlain and Sahakian, 2006, p.36).

Timimi and Taylor (2004) have debated the proposition that "*ADHD is best understood as a cultural context"* (p.8). More recently Timimi (2005) has offered a cultural-political perspective, stating in the preface of his book:

> *"I examine the scientific evidence for the existence of this disorder and show why this disorder can only be understood as a cultural invention rather than a medically valid condition"* (p.xii).

3.4.2 Conceptualisations of ADHD

Writing in 2005 Barkley states that since 1997 "*more than a hundred studies have been published on the neuropsychology of ADHD"* (2005, p.351). There has been a search for unifying themes that could account for the symptomatology, associated features and course of ADHD. This has produced a diversity of theoretical accounts of ADHD (Hinshaw, 1994).

Goldstein and Goldstein (1998) suggest *"the relative incapacity to delay is emerging as the major culprit behind the broad mosaic of an ADHD child's deficits"* (p.x). 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). As highlighted in section **3.3.2**, *"changes in nomenclature are significant in that they reflect changing conceptualisations of the nature of the condition"* (Cooper, 2006, p.250). Recent theories point to the lack of inhibitory control rather than attention as the underlying problem (Holowenko, 1999; Cooper and Bilton, 2002; Kewley, 2005). There can be significant fluctuation in the severity of ADHD symptoms across settings and variability of behaviour over time. Views of ADHD as an attention deficit are unable to account for such findings.

> *"ADHD is a developmental disorder of behavioural inhibition that impairs the development of effective self-regulation (executive functioning) and is not, as its name implies, chiefly a disorder of attention* (Barkley, 2005, p.46).

Barkley's theory of ADHD (1998, 2005) points to an impairment in three aspects of behavioural inhibition (inhibiting the pre-potent response, inhibiting ongoing responses that are proving ineffective and inhibiting responses to task-irrelevant events). He examines the effects of behavioural inhibition on four executive functions: non-verbal working memory (this includes sense of time), verbal working memory, self-regulation of affect/motivation/arousal and reconstitution (Barkley, 1998, 2005). Barkley (1998) goes further by suggesting that *"time is the ultimate yet nearly invisible disability afflicting those with ADHD"* (p.250). Research by Houghton (2004a) concludes that this may indeed be the case.

Further discussion has recently been ongoing with regard to impaired attention in ADHD in terms of weaknesses in executive function (Brown, 2002, 2004, 2006; Dendy, 2002; Westby and Watson, 2004; Band and Scheres, 2005; Nigg, 2005; Wilding, 2005). Research studies have been undertaken in both laboratory and real life settings. In Australia Houghton *et al.* (1998) have identified differential patterns in executive function of children with ADHD according to subtype. Also in Australia Lawrence *et al.* (2004) concluded that

> *"children with ADHD exhibit impairments in executive functioning and processing speed in real world activities as well as in neuropsychological testing"* (p.137).

In the UK clinical research undertaken by Charman *et al.* (2001) found that school-age children with ADHD do show impairment compared with controls on executive measures, in particular on tasks that measure inhibition.

3.4.3 Multi-professional identification and assessment

There are several concerns regarding ADHD identification and assessment procedures. An accurate assessment of ADHD requires evidence of pervasiveness and should be based on detailed information from parents, teachers, educational psychologists and other professionals (Cooper and Bilton, 2002). Multi-disciplinary or multi-modal approaches to identification and treatment of ADHD are considered essential (Cooper and Ideus, 1995; Detweiler *et al*., 1995; Kewley, 1999; BPS, 2000a; DuPaul and Stoner, 2003; Steer, 2005; Cooper, 2006).

> *"Relevant professionals need to work together in effective treatment, as no one professional group 'owns' the management of these children"* (Kewley, 1999, p.91).

Much depends on professional judgement as *"there is no unerring standard for diagnosing ADHD"* (Reid and Maag, 1994, p.350). There is a need for improved communication between disciplines (Hailemariam *et al.*, 2002). A recent study by Travell and Visser (2006) suggests a need for clearer guidelines regarding diagnostic and treatment processes.

Effective liaison between health and educational professionals is particularly important when medication is used as part of a multi-modal intervention. Teachers can play an important role in monitoring the effects of medication (Lovey, 1998, 1999; DfES, 2001d; Cooper and Bilton, 2002; Selikowitz, 2004). The present research includes an examination into the effectiveness of multi-professional approaches adopted in an LEA (in **Part 1**) and specifically in eight mainstream schools within the LEA (in **Part 2**).

Use of DSM-IV or ICD-10 criteria

Diagnostic procedures employed by qualified clinicians using ICD-10 criteria for HKD or DSM-IV for ADHD have been described in section **3.3.1.** The main difference between diagnoses made using ICD-10 criteria and DSM-IV criteria is that ICD-10 focuses on extreme levels of hyperactivity and does not have a non-hyperactive subtype (Cooper and Bilton, 2002). The differences between the two sets of criteria mean that ICD-10 have been repeatedly shown to select a smaller group of children with more

severe symptoms than those selected using DSM-IV (Munden and Arcelus, 1999). Prior (1997) claims that the number satisfying DSM-IV criteria *"are likely to be up to four times higher"* than those using the ICD-10 criteria (p.20).

Munden and Arcelus (1999) advocate the use of DSM-IV criteria: firstly, to identify more children who may have significant impairment, who do not satisfy ICD-10 criteria, but who could benefit from treatment and intervention. Secondly, the majority of international research is being carried out on patients who fulfil DSM-IV criteria and if UK clinicians wish to utilise evidence from such research they will have to apply it to the same clinical population. Although the diagnostic criteria have been developed in the context of a medical model, they can be useful in educational settings. For example,

> *"the use of DSM criteria structures the assessment in a standardised fashion, thus potentially increasing interprofessional agreement regarding diagnostic status"* (DuPaul and Stoner, 2003, p.26).

Limitations of diagnostic approaches

One of the main criticisms regarding diagnostic criteria checklists is that they rely on subjective judgements with regard to frequency of behaviours (BPS, 1996; Anastopolos *et al.*, 1997; Prior, 1997; Wright *et al.*, 2000). The ICD-10 criteria use words such as 'unduly', 'excessive', 'markedly' and 'significant' (see Appendix **3.2**) (Prior, 1997). In 16 out of 18 DSM-IV criteria the word 'often' is used (see Appendix **3.3**). *"The criteria themselves may produce comorbidity because of symptom overlap or vagueness in defining a symptom* (Pliszka *et al.*, 1999, p.5). Drawbacks identified by Anastopolos *et al.* (1997) include the wording of symptoms on both DSM and ICD being more suited to children than adolescents or adults; the use of a fixed cut-off score across a wide age range of children, adolescents and adults; and the failure to distinguish different cut-off scores for girls and boys. Other limitations of a categorical approach include the heterogeneity of symptoms displayed by individuals sharing a diagnosis and the need for experienced clinical judgement in making a diagnosis (APA, 1994).

Rating scales and observation schedules

Numerous rating scales have been devised for the observation of behaviour in the ADHD assessment process. They are usually based on frequency of behaviours included in DSM-IV criteria for the three core ADHD symptoms of inattention, hyperactivity and impulsivity (Conners, 1997; DuPaul *et al.*, 1998). Several sources provide comprehensive details of available published tests and rating scales (Maddox, 1997;

Murphy *et al.*, 2002; Plake *et al.*, 2003). Demaray and Elting (2003) recommend three out of five commonly used, published rating scales (Appendices **3.5** and **3.6**). In their critique of rating scales Reid and Maag (1994) point out *"potential problems, limitations and sources of error in the use of behaviour rating scales for identifying students as ADHD"* (p.350). These focus on two areas: the arbitrary nature of cut-off scores and problems with inter-observer agreement.

Some classroom ADHD observation schedules use interval or time sampling methods of recording in evaluations of school functioning, for example '**T**alking, **O**ut of seat behaviour, **A**ttention problems and **D**isruption (TOAD), devised by Goldstein (1998). Others focus on the three core ADHD symptoms displayed by a target pupil (Daniel and Cooper, 1999; Alban-Metcalfe *et al.*, 2002). Some techniques also observe the behaviour of a comparison same-sex pupil (Goldstein and Goldstein, 1998; Lovey, 1999). In a study by Merrell and Tymms (2001), children were assessed by teachers at one point in time using a behaviour rating scale based on the 18 DSM-IV criteria for ADHD. The observation schedules devised and used regularly in classrooms in **Part 2** of the present research used all 18 DSM-IV criteria (see Appendices **5.6** and **5.9**).

Labelling

The use of labels or diagnostic classifications such as ADHD can be controversial. One area of debate centres on the relationships between the professions involved in treating pupils who have the disorder. As stated previously, educational legislation in the UK does not require categories of disability in order to provide for pupils with special educational needs. The medical profession requires diagnostic criteria or classification particularly if it includes prescription (BPS, 1996). A project undertaken by Maras and Redmayne (1997) found that some teachers viewed ADHD as a medical phenomenon and dissociated themselves *"personally and thus professionally from the label ADHD* (p.43). Hjörne and Säljö (2004) found that school professionals viewed the diagnosis of ADHD and medicalisation as an end in itself. Research into teachers' and GPs' knowledge of terms and labels used to categorise specific learning difficulties including ADHD found variability in the two groups. They suggested that *"labels should be consistently interpreted*…(and) *they should provide a picture of the child's functional deficits"* (Kirby *et al*., 2005, p.126). If there is to be a common pathway for support, health and educational professionals should use a set of common criteria (Kirby *et al*., 2005).

Labels can be used in negative or positive ways (Kelly and Norwich, 2004). In a discussion of issues involved in inclusion, Fletcher-Campbell (2001) makes the distinction between *"pejorative labels"* and *"helpful labels"*, stating that *"'inclusive' schools tended to reject using labels just for the sake of them"* (p.78). Those from various professions who view labels such as ADHD as constructive emphasise their use in accessing the required support for the pupil (Kewley, 1999; Cooper and Bilton, 2002). Others focus on the necessity of a label or diagnosis in order for families of children with ADHD to obtain extra financial support (Steyn *et al*., 2002).

There are suggestions that we are over-diagnosing and over-labelling our children (Leech, 2004). The labelling of young people with ADHD *"may actually produce a dangerous self-fulfilling prophecy, whereby children reproduce the behaviours associated with the condition"* (Baldwin and Anderson, 2000, p.85). Another argument against the use of labels is that categorisation can be seen as a sociocultural process in which the use of

> *"medical labelling in order to obtain scarce resources marks a point at which the notion of individual deficit becomes a political rather than a psychological concept"* (Daniels, 2006, p.4).

Cains (2000) suggests consideration of a non-labelling approach. This might

> *"avoid a possible coalescence of factors into a 'prototypical' ADHD child, with the risk of concomitant negative and self-fulfilling attitudes, when the label is applied"* (p.175).

The present research includes reference to variability in attitudes to labelling in eight schools within an LEA. In summing up the discussion on labelling, it should be remembered that *"it is the uniqueness of the child that is more important than the diagnostic classification"* (BPS, 1996, p.9).

3.4.4 Use of medication

The use of medication continues to be one of the most debated and controversial issues surrounding the concept of ADHD (Ideus and Cooper, 1995; Baldwin and Cooper, 2000; Wright *et al*., 2000; Alban-Metcalfe and Alban-Metcalfe, 2001; Coghill and Markovitch, 2004). Most professionals from health and education services, parents and other interested parties who are in favour of medication advocate its use as part of a multi-modal, multi-professional treatment approach which includes a combination of medical, psychological, social and educational interventions (BPS, 1996, 2000a; Cooper

and Bilton, 2002; Kewley, 1998, 1999; Alban-Metcalfe and Alban-Metcalfe, 2001; NICE, 2000, 2006). This approach is highly effective in reducing the core symptoms of ADHD (Cooper, 2006).

> *"The correct use of medication is one of the most effective forms of therapy in ADHD, used in conjunction with other strategies. Experienced ADHD clinics report an improvement in symptoms in 88 – 95% of cases"* (Kewley, 1999, p.96).

There are reports of improvements in classroom behaviour, attention and concentration in children with ADHD, although there have been conflicting results of the effects on academic achievement (Doherty *et al*., 2000). Positive effects on peer and family relationships have been observed (Ideus and Cooper, 1995). Students with ADHD reported improvements in social and behavioural areas rather than academic achievement enhancement with the use of stimulant medication (Doherty *et al*., 2000; Moline and Frankenberger, 2001). The present research includes an examination of the use and effectiveness of medication in five LEAs (**Part 1**) and in eight schools within one LEA (**Part 2**).

Arguments for and against medication

Many of those who claim that medication should not be prescribed to treat ADHD in children are also among those who question the very existence of such a condition (see section **3.4.1**). In response to suggestions *"to take the bio-psycho-social perspective"* (Cooper and Bilton, 2002, p.21), Baldwin and Anderson (2000) refer to *"this biopsychiatric fiction"* (p.82) and Timimi (2005) uses the term *"biobabble"* (p.124) when arguing against the use of medication. In a published debate with Cooper on the treatment of ADHD, Baldwin (2000) states

> *"In the absence of a biological basis for hyperactive disorders, there is no clinical rationale for drugging children and teenagers with amphetamines"* (p.598).

Critics of medication cite various side effects that have been reported with its use. The most common short-term side effects include appetite suppression, abdominal pain, headaches, sleep difficulties, rebound effect, tics, itchy skin, rashes, a feeling of depression, mood change or nausea (Alban-Metcalfe and Alban-Metcalfe, 2001; Cooper and Bilton, 2002; Kewley, 2005*). "Side effects are relatively benign and are more likely to occur at higher dose levels"* (DuPaul and Stoner, 2003, p.222). Suggested long-term side effects are suppression of height and weight gain (DuPaul and Stoner, 2003). Cooper and Bilton (2002) report that

> *" …growth retardation is **not** a significant risk factor, although in some cases children under 10 years of age show a transient decrease in weight and slight growth slowing, which later normalise"* (p.80).

There have been occasional reports of more extreme effects of medication, for example clonidine poisoning (Sinha and Cranswick, 2004), an increased risk of cancer (*Nursing*, 2005), and cardiovascular adverse effects (Wooltorton, 2006).

Another concern voiced regarding the use of medication to treat ADHD is the potential for drug abuse and addiction (Baldwin and Cooper, 2000; Biederman and Faraone, 2005). There is no evidence of addiction to stimulants used in the treatment of ADHD (Kewley, 1999; Alban-Metcalfe and Alban-Metcalfe, 2001). "*Methylphenidate in particular is seen as an extremely safe medication, being non-addictive"* (Cooper, 2006, p.259).

> *"Studies show that 30 – 40 per cent of adolescents with Conduct Disorder or manic depression and ADHD are subject to drug and alcohol abuse"* (Kewley, 2005, p.22).

There are suggestions that *"the pharmacotherapy of ADHD has a significant protective effect, reducing the risk for substance-use disorder by 50%"* (Biederman and Faraone, 2005, p.242).

The cost to health and other public services is another factor involved in the widespread use of medication to treat ADHD (NICE, 2006).

> *"One study estimated the excess cost of the condition (relating to education, occupation impairment and medical treatment) to be $31.6 billion in the USA in 2000"* (Chamberlain and Sahakian, 2006, p. 35).

Similar figures are not available in the UK. In 1998 there were approximately 220,000 prescriptions for stimulant medications in England, rising to 418,300 prescriptions in 2004, with modified-release formulations of methylphenidate accounting for 54% of all prescriptions (NICE, 2006). Recent figures suggest that about 32,000 children are currently being treated with drugs at a cost of £13.5 million a year (NICE, 2000, 2006; *Sunday Telegraph*, 2006).

There have been concerns about the involvement of large pharmaceutical companies (a) offering financial incentives to parent support groups (Baldwin & Anderson, 2000; Foggo, 2005) and (b) making huge profits through increasing numbers of prescriptions (Timimi, 2005).

> *"Extended-release stimulant and non-stimulant treatments for ADHD … would not have been possible without considerable investment on the part of the pharmaceutical industry"* (Coghill, 2005, p.288).

Other areas of debate include: a lack of evaluation of long term efficacy of medication (Alban-Metcalfe and Alban-Metcalfe, 2001); concerns that medication is being prescribed to children who do not satisfy the diagnostic criteria for ADHD (Coghill and Markovitch, 2004); and suggestions that, by modifying children's behaviour, medication is being used as a form of social control (Baldwin & Anderson, 2000; Timimi, 2005).

3.4.5 Variability in ADHD symptoms

In addition to the three core symptoms, ADHD is *"characterised by heterogeneity and ambiguity"* (Hazelwood *et al*., 2002, p.301). The connecting factor in the sub-sections in section **3.4** of this chapter is the heterogeneity of ADHD symptoms and associated characteristics displayed by individuals who are diagnosed with the disorder. Doubts as to the existence of the disorder, theories as to its nature, debate over identification and assessment procedures and treatment, can all be said to be partly influenced by variability in ADHD symptoms and the uniqueness of each individual's difficulties and needs in specific contexts.

There may be variations in the ADHD behaviours and associated features displayed by an individual pupil in different settings, for example, home and school (Buitelaar, 2002). There may also be variability across similar situations within one setting, for example in school.

> *"Some experts regard this as one of the most common features of ADHD… this variability is outside the child's control"* (Kewley, 2005, p.33).

Several researchers have highlighted wide-ranging differences in ADHD characteristics displayed by individual pupils across settings (e.g. Goldstein and Goldstein, 1998; Daniel and Cooper, 1999; Cooper and O'Regan, 2001; DuPaul and Stoner, 2003).

An assessment of behaviour at a single time point is of limited use as there may be within-child variability *over time* as well as *across settings* (Hinshaw, 1994; Barkley, 1998; Merrell and Tymms, 2001). Formal ADHD assessment procedures should include observation of the child's behaviour on several occasions in the same classroom settings as well as across multiple settings and under varied task conditions (DuPaul and Stoner, 2003). *"Situational and temporal variation"* in school may be influenced by task

complexity, novelty and task stimulation, fatigue, the time of day and/or the degree of individualised attention being provided (Barkley, 1998, p.73). Other factors may involve the delivery and organisation of the curriculum, teaching and learning approaches and flexibility in the grouping of pupils (Cooper and Bilton, 2002, 2005).

It has been suggested that educational approaches should "*reframe ADHD as a particular cognitive style, rather than a deficit* (Cooper, 2005, p.130). The positive aspects of ADHD characteristics should be taken into account and built into the delivery and organisation of lessons (Cooper and Bilton, 2002). For example, research has found that pupils with ADHD are able to concentrate when working on a computer (Houghton *et al.*, 2004b; Shaw, 2004; Shaw and Lewis, 2005; Shaw *et al.*, 2005), when watching a television or video (Selikowitz, 2004) or when engaged in a novel activity or situation (APA, 1994; Barkley, 1998). 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 (Cooper and Bilton, 2002; Cooper, 2005). There are suggestions that pupils with ADHD may display more creativity than their peers and can be extremely inventive (Alban-Metcalfe and Alban-Metcalfe, 2001; Cooper and Bilton, 2002). Small studies by Funk *et al*. (1993) and Healey & Rucklidge (2005) found no evidence that ADHD pupils display more creativity than their non-ADHD peers. "*More research on creativity in ADHD is clearly needed"* (Barkley, 2005, p.294).

In addition to within-child ADHD variability, there is also learning and behavioural variability between pupils. There have been studies in variability in ADHD behaviours:

- between boys and girls (Breen and Altepeter, 1990);
- and the effects of stimulant medication on classroom performance (DuPaul and Rapport, 1993);
- over time and across situations (Merrell and Tymms, 2001);
- during waiting situations (Antrop *et al*., 2005);
- in three classroom contexts (Lauth *et al.*, 2006);
- comparing behavioural responses of pupils with ADHD and non-ADHD pupils (Carroll *et al*., 2006).

In **Part 2** of the present research two classroom observation schedules have been developed and used extensively in six case studies in the observation and analysis of

ADHD behaviours displayed by individual pupils, across curricular contexts and over time. There have also been comparisons of ADHD behaviours with matched non-ADHD pupils. Cross-case analyses have been undertaken between the ADHD behaviours of the six pupils across differing school contexts and over time.

Variability in comorbid/associated features

There are variations in the number and severity of comorbid and associated features experienced by individual pupils with ADHD. Many of these conditions have symptoms which overlap with those of ADHD and can confuse and complicate both diagnosis and treatment (Pliszka *et al*., 1999; Kewley, 2005; Brown, 2006).

Summary

Following a brief introduction the literature review began by making reference to relevant legislation and guidance, thus providing a background to the present research. The majority of the review has focused throughout on the concept of ADHD on three levels. In referring to the general abstract concept of this multi-faceted disorder, level (A) has included the diverse professional perspectives involved. Level (B) has concentrated on the manifestations of the disorder, particularly in the school context. Finally level (C) has focused on the multi-professional procedures used in the identification, assessment and management of ADHD.

SECTION II – RESEARCH METHODOLOGY

Chapter 4

Research methodology: general considerations

In general, research has been defined as "*a systematic investigation to find answers to a problem"* (Burns, 2000, p.3). Research aims to extend theoretical and practical understandings in a specified field. It involves a methodical investigation into a subject in order to discover facts, to generate and /or test hypotheses or to develop a plan of action based on the facts discovered. Hypotheses are suppositions that can be tested qualitatively and/or quantitatively, thus resulting in confirmation or rejection. In essence, research is 'ideas driven'. Willig (2001) suggests thinking about "*the research process as a form of adventure* … (where) *the adventure is perceived as a positive, if somewhat risky, enterprise"* (p.2). For Delamont (2002), "*doing research is a similar exercise to going on a voyage of discovery"* (preface) whereas Robson states that research "*is simply another word for enquiry"* (2002, p.xv).

Different modes of research employ various methodologies. Each mode uses a selection of data-gathering techniques, depending on such factors as the research hypotheses/ questions and the preferences and expertise of the researcher. This chapter presents a discussion of methodology, beginning with an examination of traditional research paradigms in section **4.1**. Mixed methods approaches are described in **4.2**. Three of the most important issues common to all research approaches are discussed. Section **4.3** focuses on the ethical dimension of research (British Psychological Society, 2000b; Social Research Association, 2003; British Educational Research Association, 2004). Issues of validity and reliability are examined in section **4.4** (Coolican, 1999; Cohen *et al.,* 2000; Willig, 2001; Robson, 2002; Creswell, 2003). Section **4.5** considers the issue of sampling (Burns, 2000; Cohen *et al.,* 2000; Patton, 2002). Following this chapter, details of measurement techniques used in the present research will be provided in Chapter **5**. In Chapter **6** the methodological approaches used in **Part 1** and **Part 2** are described in detail.

4.1 Traditional research paradigms

> *"'Quantitative' work refers to counts and measures of things, while 'qualitative' work predominantly uses words (and increasingly visual images) as data"* (Gorard, 2004, p.13).

A great deal of educational research has tended to be polarized as either quantitative or qualitative in approach (Brown and Dowling, 1998). Cohen *et al.* (2000) describe these as 'two conceptions of social reality' and refer to the 'subjective-objective dimension'. Others use different terminology. For example, Anderson (1998) discusses two dominant paradigms: the positivist paradigm and the post-positive paradigm. A scientific approach using quantitative research methods attempts to establish general laws or principles and is often termed 'nomothetic'. Research using a naturalistic qualitative approach is termed 'idiographic' and is concerned with the particular rather than the general (Burns, 2000).

4.1.1 Quantitative approach

Quantitative designs tend to be used in the sciences, often in experimental research and in laboratory settings where emphasis is placed on precise measurement and controlling for extraneous sources of error (Rudestam and Newton, 2001). They are concerned with scientific, positivistic approaches, using experiments, surveys, non-participant observation and structured interviews to gather data to explore and test theoretically derived hypotheses. The researcher is often interested in cause and effect relationships, variables and hypotheses and the development of theories (Creswell, 2003). These designs tend to be used in medium to large-scale research and are often concerned with macro-concepts such as society and the social system (Cohen *et al.*, 2000). Systematic observation was undertaken in the extensive ORACLE (Observational Research and Classroom Learning Evaluation) study into classroom practice in primary schools (Galton *et al*., 1980; Croll, 1986). Quantitative behaviour rating scales or inventories have been utilised in recent studies concerned with students with emotional and behavioural difficulties (Poulou and Norwich, 2000) and ADHD (Arcelus *et al*., 2000; Merrell and Tymms, 2001).

'Quasi-experimental' or 'single-subject' designs are variations which may be employed in evaluation projects in educational settings. Ahonen *et al.* (1994) adopted a single-case design when evaluating a multi-modal intervention programme used with children with ADHD. This used structured behavioural observations and rating scales in evaluating baseline and progress across subjects. Other studies have used A-B-A-B designs in which observations of behaviours are made during the baseline phase (A), prior to an intervention, followed by a second phase where the intervention is introduced (B). The process is repeated for a second intervention phase. An A-B-A-B design was used in

evaluating the influence of a token economy and medication on ADHD-diagnosed pupils during kickball games (Reitman *et al.,* 2001). When studying the effects of an eight-week summer treatment programme, Coles *et al.* (2005) adopted a B-A-B-A-B design. This began with a behaviour modification phase (B) instead of a baseline phase. This was followed by withdrawal of the behaviour modification treatment (A). The phases were then repeated.

Surveys

There are several types of survey used in research. These include longitudinal studies, with data collected over time, cross-sectional, with the data collected at one point in time, and trend or prediction studies (Cohen *et al.,* 2000). Norwich *et al*. (2002) have reported on a national study on attentional and activity difficulties which was based on a two-stage postal survey. Surveys can be used to gather descriptive data and/or to test or generate hypotheses (Coolican, 1999). They often involve the use of questionnaires, administered in three main ways: self-completion, with the questionnaires sent out by post, face-to-face interviews and telephone interviews, where the interviewer completes the questionnaire. Internet surveys operate on basically the same principle as the postal questionnaire. Respondents do not need to post a reply, they simply reply online (Denscombe, 2003). The focus group is a technique in which there is a group discussion of a predetermined issue or topic, led by a facilitator, with the responses recorded by an assistant moderator (Anderson, 1998).

4.1.2 Qualitative approach

The widespread use of qualitative, naturalistic and ethnographic research methods *"signals their increasing acceptance as legitimate and important styles of research"* (Cohen *et al.*, 2000, p.157). A recent survey of one well-known publisher's catalogue:

> *"reveals the following chronological distribution of published qualitative methods textbooks:*
>
> | | |
> |---|---|
> | *1980 – 1987* | *10* |
> | *1988 – 1994* | *33* |
> | *1995 – 2002* | *more than 130"* (Seale *et al.,* 2004, p.1). |

The more recently established qualitative approach is often characterised by small-scale research and a concern for the individual in a given context and time. It is often initiated by the personal involvement of the researcher who is interested in exploring understandings, actions and meanings. Qualitative research takes place in

> *"naturally occurring settings … where conditions continuously develop and interact with one another to give rise to a process of ongoing change"* (Willig, 2001, p.9).

The researcher collects open-ended, emerging data with the intent of *developing* theories, themes or hypotheses from the data (Creswell, 2003). The case study and grounded theory are two examples of qualitative research strategies. Data-gathering techniques include observation, interviews and document analysis. Cooper and Shea's (1999) study was based on interviews with pupils in a special day school for pupils with learning and behaviour problems. Qualitative data-gathering methods used in a case study undertaken in a Swedish mainstream school by Hjörne and Säljö (2004) included participant observation and the transcription of audio-recordings of meetings of a multi-disciplinary team, the maintaining of field notes and analysis of relevant documentation.

4.2 Mixed methods approach

"The practice of dichotomising and polarising social science research into quantitative and qualitative modes is overdone and misleading" (Burns, 2000, p.14). Researchers from both research traditions have increasingly become more flexible in their approaches. Instead of continuing the traditional quantitative-qualitative debate they have begun to make use of any methods or techniques necessary to obtain and analyse data. *"Educational research is eclectic in its paradigms, traditions, methodologies, instrumentation and data analysis"* (Cohen *et al.*, 2000, p.381). In his critical perspective on inclusive education, Lindsay (2003) advocates a mixed method approach: addressing a range of research questions with a range of methods.

Many different terms are used to describe this approach, including a mixed model (Rudestam and Newton, 2001); multiple design strategy using fixed and flexible elements (Robson, 2002); a mixed methods strategy (Creswell, 2003); multi-strategy research (Brannen, 2004) or a combined method (Gorard, 2004). Creswell (2003) gives more prominence to the mixed methods approach as a distinct research strategy. He presents a *"unique comparison of the three approaches to inquiry"* (p.xix): namely, quantitative, qualitative and mixed methods approaches.

> *"The first has been available to the social and human scientist for years, the second has emerged primarily during the last three or four decades, and the last is new and still developing in form and substance"* (Creswell, 2003, p.3).

Gorard (2004) reports at length on the growing interest in UK education research in what he calls a third methodological movement, combining research approaches, *"as dissatisfaction grows with the limitations of traditional mono-method studies"* (p.vi). In a mixed methods approach the researcher makes decisions as to the purposes and type of information needed for the particular research study. When choosing the data-gathering methods a rationale is presented for using selected quantitative and qualitative methods. Data which include both numeric and text information are collected either sequentially or simultaneously. For example, a two-phase study might begin with a large-scale survey and then focus down on to in-depth case studies (Brannen, 2004). In the PACE (Primary Assessment, Curriculum and Experience) project, classroom and assessment studies were embedded in a survey (Pollard *et al*., 1994; Croll, 1986). Alternatively, a study using qualitative methods might be followed up with one using quantitative methods.

In a concurrent design the researcher collects both forms of data at the same time and then integrates the data in the interpretation of the results (Creswell, 2003; Gorard, 2004). In a study in two residential schools for pupils with emotional and behavioural difficulties, Cooper's data gathering methods included participant and non-participant observation, tape-recorded interviews with staff and pupils, self completed questionnaires by staff, pupils and parents and document analysis (Cooper, 1993). A combination of systematic observation and semi-structured interviews was used by Daniel and Cooper (1999) in their study on teachers' classroom strategies with pupils with ADHD. Pester (2002) combined an analysis of daily reports with interviews and structured behaviour observations.

Case studies

Case studies are used extensively in social science research and particularly in practice-oriented fields such as social work and education. They can make use of both qualitative and quantitative approaches and methods. The case study is not itself a research method, it is a comprehensive research strategy, which covers the design, data collection techniques and specific approaches to data analysis (Yin, 2003). Robson (2002) offers the following definition:

> *"Case study is a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence"* (p.178).

Although slightly differing definitions are offered (Anderson, 1998; Creswell, 1998; Cohen *et al.*, 2000; Willig, 2001; Bassey, 2002; Robson, 2002; Denscombe, 2003), most agree on the following defining features of case study research. It:

- is theoretically driven;
- is empirical, relying on the collection of evidence about what is going on;
- is concerned with the particular rather than the general - *"an idiographic perspective"* (Willig, 2001, p70), which concentrates on patterns of performances;
- uses multiple methods of data collection – both qualitative and quantitative – to provide unique in-depth information on an individual or group, a single case, small number of related cases or multiple cases;
- is carried out in naturalistic contexts, within a bounded system of time and space;
- combines a description of events with analysis of them.

Case studies can serve different purposes. Yin's (2003) list of applications includes: explanatory, descriptive, illustrative and exploratory case studies. The researcher chooses the most appropriate type of case study for addressing particular research questions. The case can be single or collective, multi-sited or within site, intrinsic or instrumental (Creswell, 1998).

> *"Intrinsic case studies … are chosen because they are interesting in their own right. … In instrumental case studies the cases constitute exemplars of a more general phenomenon"* (Willig, 2001, p.73).

Strengths and weaknesses of research approaches

Table **4a** provides a summary of the major strengths and weaknesses of the research approaches described above. Details have been drawn predominantly from the sources cited in the preceding sections.

Table 4a. Summary of strengths and weaknesses of research approaches

Approach	Strengths	Weaknesses
Quantitative approach	• Issues of validity, reliability and generalisation can be addressed with a high degree of consistency. • Statistical methods are useful for looking at relationships and patterns and expressing these patterns with numbers. • Theoretically-derived hypotheses can be tested through a hypothetical-deductive approach.	• It is not wholly appropriate for real world research where representative samples cannot readily be obtained. • Information may be lost in describing social settings in terms of a pre-formed set of categories when using structured observation. • Quantification fails to take account of people's unique ability to interpret their experiences and construct their own meanings.
Survey approach	• Self-administered surveys can provide large amounts of data, at relatively low cost in a short period of time. • Respondents are free to answer in their own time and at their own pace.	• There may be a poor response rate or non-response, often due to questionnaire fatigue. • There may be possible data entry errors. • There may be possible misinterpretation of questions by respondents.
Qualitative approach	• Social phenomena are viewed holistically. • It offers opportunities for the researcher to build up a rapport with participants. • It can suggest possible relationships, causes, effects and dynamic processes in, for example, school settings. • Theory will emerge as the research unfolds. • Hypotheses can be generated or tested.	• There are possible difficulties with issues of confidentiality and anonymity. • There may be questions of internal validity or reliability of informants' information. • Collecting data can be expensive and time-consuming. • There are issues concerning reliability, validity and generalisability of data elicited. • There may be difficulties with focusing on the familiar; reactivity; halo effect. • The researcher may be seen as intrusive. He/she may not have effective observation skills in a given context.
Mixed methods approach	• It aids in triangulation and validation of findings. • Multiple forms of data draw on wider possibilities. Results from one method can help develop or inform other methods. • It produces a greater range of information to allow conclusions to be drawn about causes, effects and their meanings.	• There is a need for extensive data collection. • There may be problems with the time-intensive nature of analysing both text and numeric data. • The researcher needs to be familiar with both quantitative and qualitative forms of research.
Case study approach	• Multiple data sources gather unique in-depth information which may be lost in larger scale data from other research strategies. • Insights are provided into similar situations and cases, thereby assisting interpretation of other cases. • A single researcher can undertake case studies. • Case studies can embrace and build in unanticipated events and uncontrolled variables.	• There may be difficulties negotiating access to documents, people and settings. • Case studies may be prone to problems of observer bias. • There is debate surrounding the nature of generalisability of research findings.

4.3 Ethics

In conducting any research with human beings there have always been ethical issues which need to be addressed. All researchers are responsible for safeguarding the interests of those involved in or affected by their work and for reporting their findings accurately and truthfully.

> *"In recent years ethical considerations across the research community have come to the forefront. This is partly a consequence of legislative change in human rights and data protection, but also as a result of increased public concern about the limits of inquiry"* (Social Research Association, 2003, p.7).

Research institutions have ethics committees to oversee the ethical nature of research. Several professional bodies publish codes of conduct and research guidelines to promote ethical practice (for example, American Psychological Association, 2002; Social Research Association, 2003). The British Educational Research Association (BERA) sets out its guidelines under the following headings: responsibilities to participants, responsibilities to sponsors of research and responsibilities to the community of educational researchers (BERA, 2004). Ethical principles for conducting research with human participants published by the British Psychological Society include consent, deception, debriefing, withdrawal from the investigation, confidentiality and protection of participants (BPS, 2000b).

In his overview of major ethical guidelines, Lindsay (2000) highlights the lack of specific guidance on research with children. The National Children's Bureau (NCB) identifies the following particular ethical standards as appropriate for research with children: the informed consent of children; child protection and confidentiality; rewards for participants; and monitoring the impact on the child (NCB, 2006).

Connolly (2003) chooses to group ethical concerns as the professional integrity of the researcher, respect for the rights and dignity of participants, and the well-being of all those involved. The two main ethical issues suggested by Rudestam and Newton (2001) "*are the need for fully informed consent to participate and the need to emerge from the experience unharmed"* (p.265). It is necessary to balance the potential benefits of a study with the costs and potential risks to all involved (Cohen *et al.*, 2000). Although organisations and researchers may use different sub-headings, all seek to address the same key ethical principles, identified by Ryen (2004) as codes and consent, confidentiality, and trust.

4.3.1 Ethics in the present research

Although adopting a mainly educational perspective, the present research is multi-disciplinary and so no one set of guidelines applies. Most importantly, *"ethical responsibility begins with the individual researcher and the researcher is the main determinant of ethical standards"* (Anderson, 1998, p.26). The following two sections will highlight ethical considerations in the methodological approaches adopted in **Parts 1** and **2** of the present research, as *"methodological and ethical issues are inextricably interwoven"* (Cohen *et al.*, 2000, p.66). Further reference will be made to particular ethical concerns where appropriate in descriptions of data gathering methods in Chapters **5** and **6**.

4.3.2 Part 1 - Survey ethics

Whether conducted face to face, by post or by telephone, it is important to bear in mind issues of consent, confidentiality, anonymity and trust at all stages of a questionnaire survey. These include the design of the questionnaire, the approaches and explanations given to the participants and the analysis and dissemination of data. In addressing the issue of consent:

> *"Respondents cannot be coerced into completing a questionnaire. They might be strongly encouraged, but the decision whether to become involved and when to withdraw from the research is entirely theirs"* (Cohen *et al.*, 2000, p.245).

Guarantees of confidentiality, anonymity and non-traceability in the research may be included in a covering letter, which should also inspire the trust of respondents. In aiming to assure the integrity of the 2003 ADHD school survey in the present research, a covering letter was sent out to schools (Appendix **5.2**). This outlined the collaboration between the LEA and the then University College (now University) and was signed by the LEA's Principal Educational Psychologist/Access and Inclusion Manager. The letter set out the aims of the survey and stressed its importance *"to the authority, schools and above all children and their families"*. It also included recognition of the time and effort expected of those involved and thanked them for this (Connolly, 2003). Each school was asked to confirm parental consent by sending copies of an 'Information for Parents' sheet (Appendix **5.3**) to parents of identified children.

Results from the 2003 ADHD school survey were disseminated to all schools and discussed in greater detail at a Continuing Professional Development (CPD) Study day held in May, 2004. The final report included letters of thanks from the Principal

Educational Psychologist/Access and Inclusion Manager on behalf of the LEA and the Director of the Centre for Special and Inclusive Education on behalf of the University College. Although the LEA was identified on the original survey report, anonymity was maintained with regard to details of individual schools and pupils. Total anonymity has been preserved in the report on KS1/KS2 produced in **Part 1** of the present research.

4.3.3 Part 2 - Case study ethics

In gaining consent to undertake school-based case studies, an initial written approach was made to the Headteacher at each school. This included a summary of the purpose of the research as a whole and a brief description of the requirements for the intended case study. Each headteacher acted as a 'gatekeeper', that is, someone who has

> *"a positive, protective function, sheltering children and young people from potential harm and testing the motives of those who want access"* (Masson, 2000, p.36).

More details regarding time commitment and possible benefits were supplied during meetings with each special educational needs co-ordinator (SENCO) and class teacher prior to the case study period. Schools had the responsibility for informing governors of the research. Informed consent was obtained from members of staff who took part in informal interviews. Parental consent for the six individual pupils involved in the case studies was obtained through each school. Following the permission of their teachers, the consent of individual children was secured for short interviews during which self-esteem questionnaires were completed.

"Case study research needs to be particularly sensitive to issues around confidentiality and anonymity" (Willig, 2001, p.78). Although the teaching staff in each school knew the focus of the research, the children were unaware that one particular child was being studied. Throughout the present research process pseudonyms were used for the case study individuals and comparison pupils. Staff were identified only by their role (for example, SENCO, class teacher, teaching assistant) and each school was distinguished by a number (1 – 8). It was important to agree beforehand in each school the precise arrangements for observations, interviews and the extent of accessibility to documents. All names on documents which were photocopied were blanked out and shown to the teacher before being removed from the school premises.

"Trust is the traditional magic key to building good field relations …" (Ryen, 2004, p.234). It was particularly important to achieve acceptance and goodwill as each case study extended over a two-year time period. The researcher's previous experience as a teacher in both mainstream and special school settings proved to be an advantage in gaining the trust and co-operation of school personnel and pupils involved in the six case studies. The shared common experiences of the classroom helped to establish good relationships between researcher and participants (Delamont, 2002).

At the end of each research period in both the main phase and the follow up phase short reports on target case study pupils were sent to relevant schools for information. In several cases SENCOs had suggested that these findings might be used in gathering evidence when seeking further educational provision or support. Other data gathered, including details of class self-esteem scores, were considered to be useful by school staff. Presentations describing selected results obtained using the two systematic observation schedules (see Chapter **6**) have been made by the researcher at the University College/ University. The first two of these presentations were at CPD study days held on 1st March, 2003 and 22nd May, 2004 and the third was at a Research Student Conference on 1st July, 2006.

Comment

In considering the ethics of combined methods research, Gorard (2004) urges the researcher to choose the best mix of methods. He suggests that:

> *"our control over the quality of our work is … generally greater than our control over ethical factors. Thus, ethically, the first responsibility of all research should be to quality and rigour"* (p.173).

4.4 Validity and Reliability

"There is no singular or exclusive version of reliability (or) *validity"* (Cohen *et al.*, 2000, p.47). It is important to establish validity and reliability in any research design and in the measuring techniques employed. As previously stated, the present research combines mixed qualitative and quantitative approaches and methods in **Part 1** and **Part 2.** This provides both methodological and data triangulation and enhances the credibility of the study. This section will address issues of validity and reliability in qualitative and quantitative research in general and in the approaches adopted in the present research study. Chapters **5** and **6** will include further detail on the validity and

reliability of the specific measuring instruments and research methods used in both parts of the research.

4.4.1 Validity

> *"Validity can be defined as the extent to which our research describes, measures or explains what it aims to describe, measure or explain"* (Willig, 2001, p.16)

Validity is the complement to reliability and is a requirement for both quantitative and qualitative research. Because of the unknown nature and range of variables likely to affect validities, it is impossible for all data to be 100 per cent valid. Despite this caveat, it is essential for researchers to make every effort to minimise invalidity and maximise validity throughout the research process. The way in which validity is addressed varies between types of research. There are several types of validity (Cohen *et al*., 2000 list as many as 18 different types). Some are more applicable to specific research traditions. Both quantitative and qualitative studies can address internal and external validity.

Internal validity

> *"Internal validity refers to the validity of data measures…* (It) *also relates to issues of truthfulness of responses, accuracy of records, or the authenticity of historical artefacts"* (Anderson, 1998, p.13).

Several possible threats to internal validity have been identified. These may be related either to inadequate procedures or to the characteristics of the participants in experimental treatments (Creswell, 2003). The following list of threats has been compiled from several sources (Anderson, 1998; Coolican, 1999; Burns, 2000; Cohen *et al.*, 2000; Robson, 2002; Creswell, 2003).

- *History*. Events other than the experimental treatment may occur during the time between pre-test and post-test observations. These events produce effects that can mistakenly be attributed to differences in treatment effects.
- *Testing*. Changes occurring as a result of practice and experience gained by participants on any pre-tests.
- *Instrumentation*. Unreliable instruments can introduce errors. With human observers there is the possibility of changes in their skills and levels of concentration. *Reliability is a necessary, but not sufficient, condition for validity.*
- *Regression*. On average, participants scoring highest on a pre-test often score relatively lower on a post-test, and vice-versa.

- *Dropout*. Participants dropping out of the study.
- *Maturation*. Growth, change or development in participants unrelated to the enquiry. The problem is more acute in protracted educational studies than in brief laboratory experiments.
- *Selection*. Bias may be introduced as a result of differences in the selection of participants for comparison groups or when intact classes are employed as experimental or control groups.
- *Diffusion of treatments*. Where one group learns information or otherwise inadvertently receives aspects of a treatment intended only for a second group.
- *Rivalry or demoralisation of control group*. 'Control' participants may try to do as well as the 'intervention' group or they may resent the 'intervention'.

External validity

External validity refers to the extent to which results of research can be generalised across people, places, times and other measures of the same variables. Threats to external validity arise when incorrect inferences are drawn from sample data. As above, by drawing on the same selected sources the following factors that may affect external validity have been identified.

- *Inadequate theoretical and operational variable definition*.
- *Lack of representativeness of available and target populations*.
- *Hawthorne effect*. Efforts must be made to ensure that the researcher's presence and client involvement does not alter the behaviour of the participants.
- *Hypothesis guessing*. In seeking to "make sense" of their situation, participants may "guess", correctly or otherwise, what is required of them.
- *Evaluation apprehension*. Hypothesis guessing may lead to trying to please the researcher.
- *Experimenter expectancy*. The experimenter or researcher may inadvertently affect participants' responses through facial or verbal cues.
- *Sensitisation to experimental conditions*. As with threats to internal validity, pre-tests may cause changes in participants' sensitivity to experimental variables.
- *Interaction effects of extraneous factors and experimental treatments*.
- *Invalidity or unreliability of instruments*. Valid techniques *must* be reliable; reliability of a technique does not ensure its validity.

Validity in quantitative research

It is possible to distinguish five main types of validity namely, face, content, concurrent, predictive and construct, with construct validity being the most important form from the research point of view (Burns, 2000). In quantitative research the focus is on theoretically deduced hypothesis testing. The psychometric qualities of the measuring instrument are central. These should be carefully constructed or selected to ensure they measure what they are supposed to measure (Patton, 2002).

Face validity is the extent to which the validity of a test is deemed self-evident (Coolican, 1999). Content validity is a more sophisticated version of face validity and is most often determined on the basis of expert judgement. It is the representativeness or sampling adequacy of the content of a measuring instrument (Burns, 2000). To demonstrate content validity an *"instrument must show that it fairly and comprehensively covers the domain or items that it purports to cover"* (Cohen *et al*., 2000, p.109). This applies to the survey questionnaire used in **Part 1** and the observation schedules and self-esteem questionnaire used in **Part 2** of the present research.

Concurrent validity and predictive validity, two types of criterion-related validity, differ only in terms of timing. They are both characterised by prediction to an outside criterion and by checking a measuring instrument against some outcome (Burns, 2000). Concurrent validity is concerned with the *"extent to which test results conform with those on some other measure, taken at the same time"* (Coolican, 1999, p.157). Predictive validity refers to the extent to which a test will predict future test scores. It can be assessed by comparing a later performance with original test scores.

Construct validity is an analysis of the meaning of test scores in terms of psychological concepts or constructs (Burns, 2000). In addressing the issue of construct validity the concern is *"to what extent do our measures of a concept under study really reflect the breadth of that concept?"* (Coolican, 1999, p.56). Threats to construct validity may occur when researchers use inadequate definitions and measures of variables (Creswell, 2003).

Validity in qualitative research

In qualitative or naturalistic research validity can be a more problematic concept. Other terms such as trustworthiness, authenticity, credibility, coherence and understanding are often used to describe qualitative research (Cohen *et al.*, 2000; Robson, 2002; Creswell, 2003; Gorard, 2004). Instead of relying largely on tools and explicit measuring instruments, the researcher is the instrument. This means that the credibility of qualitative methods relies mainly on the competence and skill of the researcher (Patton, 2002).

In describing validity in qualitative studies, several authors simply make the distinction between internal validity and external validity (for example, Rudestam and Newton, 2001; Opie, 2004). Robson (2002) suggests several strategies for dealing with threats to validity including prolonged involvement and triangulation. Five possible kinds of validity in qualitative research are descriptive validity, interpretive validity, theoretical validity, generalisability and evaluative validity (Cohen *et al*., 2000).

4.4.2 Reliability

Different research traditions have various definitions of reliability, but in general reliability is concerned with dependability, accuracy and consistency in both quantitative and qualitative studies. It can be defined as

> *"the extent to which a measuring device, or a whole research project, would produce the same results if used on different occasions with the same object of study"* (Robson, 2002, p.551).

Reliability in quantitative research

Although there are slight variations in the terms used, in quantitative research there are four measures of reliability, reliability as stability, reliability as equivalence, reliability as internal consistency and reliability as stability and equivalence. Cohen *et al.* (2000) describe three principal types of reliability, stability, equivalence and internal consistency. Coolican (1999) uses the terms internal reliability or internal consistency and external reliability or stability.

Reliability of stability is a measure of consistency over time and over similar samples, often referred to as the test-retest method. To check that a test produces similar results each time it is used, a group of participants is tested once, then again some time later. The test-retest reliability of the test can be expressed as the correlation between the

individual scores from the two administrations of the same test given to the same participants. The researcher must decide an appropriate length of time between tests. Although *"a minimum of one day and … a maximum of one year"* are generally acceptable boundaries for test-retest reliabilities, *"a two- to three-month period is best"* (Burns, 2000, p.340). Longitudinal studies can involve multiple re-tests on an instrument.

Reliability as equivalence may be achieved in two ways: through using equivalent or alternative forms of a test or data-gathering instrument or through inter-rater reliability. If an equivalent form of the test produces similar results, then the test can be said to demonstrate this form of reliability If more than one researcher is taking part in the research, agreement between all researchers must be achieved through ensuring that each researcher enters data in the same way (Cohen *et al.*, 2000). As a single observer used the systematic observation schedules in **Part 2** of the present research, 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. A comprehensive account of this procedure is provided in Chapter **5**.

The split-half method can be used in measuring reliability as internal consistency. This involves splitting the numbered questions on a measure or test randomly, or by odd or even numbers, and comparing participants' scores on the two halves. Each half is marked separately. The scores obtained on one half of the test can be correlated with scores on the other half of the test (Burns, 2000). This type of reliability assumes that the test administered can be split into two matched halves (Cohen *et al*., 2000).

To measure the reliability as stability and equivalence, an alternate form of the same test is administered after a period of time. This combines the test-retest method with the alternate or parallel forms method of determining reliability, as described above.

Reliability in qualitative research

As is the case with validity, reliability is not as straightforward to define or measure in qualitative research as it is in quantitative studies. There is disagreement among qualitative researchers about the extent to which reliability ought to be a concern for

qualitative research. Qualitative researchers are less concerned with statistical indices of reliability than quantitative research workers

> *"because qualitative research explores a particular, possibly unique, phenomenon or experience in great detail. It does not aim to measure a particular attribute in large numbers of people"* (Willig, 2001, p.17).

Robson (2002) suggests the use of the term trustworthiness as well as reliability in what he refers to as flexible, qualitative research. He goes on to state that the demonstration of the reliability of these methods and research practices

> "*involves not only being thorough, careful and honest in carrying out the research, but also being able to show others that you have been"* (p.176).

The issue of reliability may be replaced by the likelihood of another researcher obtaining the same results by following the same procedures as the original researcher. It is therefore essential that full details are provided of the aims of the research, the methods adopted and the reasoning behind key decisions made (Denscombe, 2003). This could be accomplished by providing an audit trail where a full record of activities is kept throughout the study (Rudestam and Newton, 2001; Robson, 2002). Yin (2003) describes this as maintaining a chain of evidence. Throughout the present research comprehensive records have been systematically kept. In addition to the quantitative data in **Parts 1** and **2**, extensive qualitative field notes have been maintained throughout the individual case studies in **Part 2**.

Relationship between validity and reliability for quantitative research

Unless a measure is reliable, it cannot be valid. Robson (2002) states *"while reliability is necessary, it is insufficient to ensure validity"* (p.101). Given reliable procedures, a quantitative observation instrument provides an 'objective' indication of what was observed (Anderson, 1998). The generalisability of results from a specified sample to a population can be achieved. The techniques and procedures can be replicated readily.

Relationship between validity and reliability for qualitative research

Issues of validity and reliability in qualitative research are somewhat different and can be more difficult to establish. Therefore their relationship to each other is less clear-cut. Without quantitative evidence, the onus is more on the researcher. Skills such as an enquiring mind, a good memory, flexibility, a firm grasp of the issues involved and a lack of bias are important in effective qualitative research (Robson, 2002).

4.5 Sampling

> *"Sampling considerations pervade all aspects of research and crop up in various forms no matter what research strategy or investigatory technique we use"* (Robson, 2002, p.260).

In the early stages of most research processes the researcher needs to define precisely the population, that is, all the cases on which the findings of the research on a given sample will focus. A sampling frame is a list of the population from which the researcher can select a subset or sample. Examples of sampling frames are a telephone directory listing all residents in an area or a school attendance list. A good sampling frame should be relevant, complete, precise and up-to-date (Denscombe, 2003). Decisions need to be made about the following key factors in sampling: the size and representativeness of the sample, access to the sample and the choice of sampling strategy (Cohen *et al*., 2000).

4.5.1 Size and representativeness of the sample

There are no clear-cut answers as to the appropriate size of a sample.

> *"With both qualitative and quantitative data, the essential requirement is that the sample is representative of the population from which it is drawn"* Cohen *et al*., 2000, p.95).

Sample size is determined by the purpose and style of the research. Decisions need to be made regarding the extent to which it is important that the sample represents a defined population in question if it is to be a valid sample. In quantitative research a precise sample number can be calculated according to the level of accuracy and the level of probability required (Cohen *et al*., 2000). Market research companies will often limit their national samples to around 2,000 and opinion polls tend to be based on samples of over 1,000 people (Denscombe, 2003). The sample in a study by Merrell and Tymms *"comprised 4148 children from a nationally representative sample of schools in England"* (2001, p.43). In an epidemiological study of hyperactivity in Hong Kong, 3069 Chinese schoolboys from 130 randomly sampled schools were screened by questionnaires. A stratified sample of 611 boys then entered a second stage for more detailed diagnostic assessment (Leung *et al*., 1996). Lauth *et al*. (2006) selected

> *"a sample of 55 students with ADHD problems, and 55 matched controls from a population of 569 primary school students"* (p.385).

In qualitative research

> *"there is a different logic for the size of the sample … a small sample size is quite in keeping with the nature of qualitative research"* (Denscombe, 2003, p.24).

Suggestions for sample sizes include 30 to 60 participants if semi-structured interviews are used (Robson, 2002). An empirical study of young people's perceptions of ADHD focused on 16 pupils in a school which had 48 pupils on roll. All 16 of the students interviewed had been formally diagnosed with ADHD by the same physician and had undergone a uniform assessment process (Cooper and Shea, 1999). Kelly and Norwich (2004) conducted semi-structured in-depth interviews with 101 statemented pupils (50 in special schools and 51 in mainstream schools) in their study on the perceptions of self and labels. Rudestam and Newton (2001) recommend 20 to 30 participants in grounded theory studies. *"Case studies are so various for it not to be sensible to give general suggestions"* (Robson, 2002, p.199). There are examples of case studies which concentrate solely on one individual (Pester, 2002; Young and Newland, 2002). The generation, rather than the testing of hypotheses, is an important consideration.

4.5.2 Access

Researchers need to ensure that access to the sample is permitted and also practicable. There are many reasons which might prevent access. Participants might not be able to spare the time needed for the research or may be reluctant to make certain information public. Access to sensitive areas might present legal and administrative problems. If sufficient consideration is not given to access in the sampling procedure, a researcher might discover, during or following the data collection, that the release of information might be problematic or subject to restrictions (Cohen *et al.,* 2000). The up-to-date schools list used in the survey in **Part 1** of the present research was obtained by the researcher from LEA personnel. Delamont (2002) suggests, *"it is an excellent idea to use contacts to get started on access negotiations"* (p.85). Personal contacts of the researcher might be more likely to co-operate and more willing to take part in research. The schools and target pupils in the case studies in **Part 2** were identified either through personal contacts of the researcher or the recommendations of colleagues (see Chapter **6** for further details).

4.5.3 Sampling strategy

There are two main sampling techniques, probability sampling and non-probability sampling. A probability sample (also known as a random sample) is useful in making

generalisations because it seeks representativeness of a wider specified population. A non-probability sample (also known as a purposive or purposeful sample) seeks only to comprise a particular group of the wider population (Cohen *et al*., 2000). Patton (2002) states that in purposeful sampling,

> *"cases for study are selected because they are 'information rich' and illuminative, that is, they offer useful manifestations of the phenomenon of interest; sampling, then, is aimed at insight about the phenomenon, not empirical generalisation from a sample to a population"* (p.40).

There are various types of each sampling strategy. The following two lists have been compiled from several sources (Coolican, 1999; Burns, 2000; Cohen *et al*., 2000; Robson, 2002; Denscombe, 2003).

Probability samples

- *Simple random sampling.* The required number of subjects is selected at random from a list of the population being studied. Each member of the population has an equal chance of being selected.
- *Systematic sampling.* Subjects are selected in a systematic rather than a random fashion as above.
- *Stratified sampling.* The population is divided into a number of groups where members of a group share a particular characteristic. There is then random or systematic sampling within each group.
- *Cluster sampling.* The population is divided into a number of units or clusters, each of which contains individuals having a range of characteristics. A school is an example of a naturally occurring cluster.
- *Stage sampling.* An extension of cluster sampling, this involves selecting the samples in stages.

Non-probability samples

- *Convenience sampling.* Sometimes referred to as *opportunity sampling*, this involves selecting the nearest or most conveniently accessible groups or individuals.
- *Quota sampling.* The strategy is to obtain representatives of the various elements of a population, usually in the relative proportions in which they occur in the population.

- *Dimensional sampling.* This is an extension of quota sampling. It involves identifying various factors of interest in a population and obtaining at least one respondent of every combination of those factors.
- *Purposive sampling.* The sample is 'hand picked' for the research. The principle of selection is the researcher's judgement as to typicality or interest. A sample is built up which enables the researcher to satisfy the specific needs in a project.
- *Snowball sampling.* The researcher identifies one or more individuals from the population of interest. These individuals are then used to identify other members of the population who are contacted and hopefully included in the sample.

Summary

This chapter has presented a broad overview of research methodology. In examining research design, ethics, validity and reliability and sampling it has made specific reference to the mixed method approaches adopted in the present research. The next two chapters provide detailed accounts of the measurement techniques and the specific methodological approaches used in **Parts 1** and **2** of the research.

Chapter 5

Measurement techniques

This chapter provides details of the measurement techniques used in both parts of the present research undertaken in an LEA (LEA 1). It begins with the questionnaire used in the 2003 ADHD schools survey reported in **Part 1**. There follows a description of the design and use of two classroom observation schedules and the adapted self-esteem questionnaire used in the individual case studies in **Part 2**.

5.1 Survey questionnaire (Part 1) (Appendix **5.1**).

Design

Firstly, efforts were made to ensure the appropriateness of the questionnaire used in the present research by choosing to modify a questionnaire previously used with a similar school population (LEA 2). Secondly, the particular questionnaire was chosen "*because it reflects the conceptualisation of the phenomenon in a manner that is consistent with* (the researcher's) *position"* (Rudestam and Newton, 2003, p.82). The 1998 survey in LEA 2 had focused on information regarding ADHD from an *educational* perspective, as was the case in the present research. Headteachers were the primary contacts.

A copy of the questionnaire used in the 1998 survey was obtained, along with permission for its adaptation and use in LEA 1. The researcher, together with colleagues from the University College and the County Educational Psychology Service, analysed each question for suitability of use in the 2003 survey in LEA 1. Several minor modifications were necessary in order to obtain data specifically appropriate to LEA 1. Modifications were also made to the original covering letter (Appendix **5.2**) and 'Information for Parents' sheet (Appendix **5.3**) used by LEA 2.

The adapted questionnaire covered two sides of an A4 sheet, which was considered a manageable size. After five general questions pertaining to an individual pupil, the questions mainly involved the ticking of boxes or deleting 'Yes/No' for answers to 13 closed questions. There were also five open-ended questions and a final section for 'any other comments'. The questions were aimed at gaining detailed information on:

- the incidence of ADHD, including breakdowns by gender, age group, diagnosis, SEN Code of Practice stage and comorbidity;
- the use and effects of medication;

- multi-disciplinary approaches in the management of ADHD; and
- specific training needs for schools.

Ethical concerns and issues of validity and reliability, which have been considered in Chapter **4**, were addressed with specific reference to the adapted survey questionnaire. When using a questionnaire approach to data collection, face validity (a form of content validity) is the form generally used. The original questionnaire had been used successfully in a previous LEA survey. The data collection and analysis succeeded in addressing the questions appropriate for the present research study.

Distribution

As LEA 2 had successfully completed a survey using the original questionnaire, a pilot survey was not considered necessary in the present research. The questionnaires, covering letters and 'Information for Parents' sheets were distributed to the schools early in January 2003. Also enclosed were details of the first ADHD study day held on 1st March, 2003 at the University College, entitled *Including and Teaching Children with Attention Deficit Hyperactivity Disorder (ADHD)*. The programme included a progress update on the survey, together with a tactful reminder to those schools yet to respond. A system of internal mailing regularly used between schools and county council offices was utilised in delivering documents to and from schools within LEA 1.

Follow up

Follow up letters were sent out to non-responding schools at the end of March 2003 (Appendix **5.4**), after close monitoring revealed a response rate of approximately 33% at that time. These letters emphasised the importance of the survey and the value of the respondents' participation (Robson, 2002). They included a request for 'Nil' returns as well as those questionnaires identifying pupils with an ADHD diagnosis in a given school. The final response rate in LEA 2 had been 95% and it was anticipated that a similar result was possible in LEA 1. The compilation of a schools database (Document **CD1**) and coding key (Document **CD2**) and the analysis of available data were ongoing. In May 2003, with the response rate at approximately 71%, further follow up was undertaken by telephone. A second follow up letter (Appendix **5.5**) was mailed to the few remaining non-responding schools, together with more copies of the questionnaires, resulting in a 92% response rate in June. A decision was made to discontinue formal follow up, but subsequently further replies were received and a final response rate of

94% was achieved. This response rate from schools indicated a high degree of professional involvement, although there is no guarantee that respondent professionals necessarily understood the questions fully based on an 'emerging concept' in the SEN field (Anderson, 1998). Nonetheless, a high response rate to a questionnaire is considered better than a low response rate (Denscombe, 2003).

5.2 Systematic observation schedules (Part 2)

Given the focus on *developing* rather than empirically testing, hypotheses, the purpose of systematic classroom observation is initially to provide an accurate description of selected features of activities and interactions in classroom settings. In the present research the intention was to monitor individual pupils and to record accurately the numbers of specific ADHD behaviours they displayed over given periods. Richards (1997) stresses the need for close observation

> "*in the field of attentional/behavioural problems,* (in order) *to define problem behaviours as precisely as possible and not to accept at face value generalised attributions of, for example, 'attention-seeking behavioural problems'"* (p.89).

There are many examples of published schedules for observation of classroom behaviour (Pollard *et al.*, 1994; Ayers *et al.*, 1996; Lovey, 1998, 1999; Goldstein and Goldstein, 1998) and rating scales used in the diagnosis of ADHD (Conners, 1997; DuPaul *et al.*, 1998). These were not considered suitable in their original form for the purposes of the present practice-based research. Holowenko (1999) suggests tailoring observation schedules to individual needs and circumstances and Croll (1986) advises the incorporation of some aspects of well-established schedules into designs. A decision was made to modify existing instruments in order to gather appropriate quantitative classroom data on the variability of ADHD symptoms. The two schedules were developed from this theoretical perspective. Basing the coding system for both schedules on DSM-IV criteria for ADHD (APA, 1994) ensured that the categories used had been professionally validated and related "*directly to the phenomenon being investigated"* (Brown and Dowling, 1998. p.49). Other research studies have included the three core ADHD symptoms in observation schedules used when observing classroom behaviour (Daniel and Cooper, 1999; Alban-Metcalfe *et al.*, 2002).

Consideration was given to suggestions by Robson (2002) that categories should be focused, objective, non context-dependent, explicitly defined, exhaustive, mutually

exclusive and easy to record. Cohen *et al*. (2000) emphasise the importance of decisions regarding each schedule's *"fitness for purpose"* (p.307). They list four ways of entering data onto a structured observation schedule: event sampling, instantaneous sampling, interval recording and rating scales. DuPaul and Stoner (2003) recommend two goals for the school based direct observation stage of the multi-method assessment of ADHD:

> *"(1) to establish the frequency of inattentive, impulsive and/or restless behaviours relative to classmates; and (2) to obtain stable unbiased estimates of these frequencies by conducting observations on several occasions in the same classroom setting"* (p.41).

Bearing these suggestions in mind, it was decided that two different time sampling techniques were required to collate sufficient data on variability across curricular contexts, over time and between pupils with and without ADHD:

1) a schedule which would provide data regarding frequency and duration of ADHD and non-ADHD behaviours, focusing on the target pupil (later referred to as Fixed Interval Sampling or FIS),
2) a schedule which would enable data to be collected on both the target pupil and a non-ADHD peer for purposes of comparison (later referred to as Instantaneous Time Sampling or ITS).

5.2.1 Fixed Interval Sampling (FIS) (Appendix **5.6**)

This technique requires the observer to record what has happened during the preceding interval, the length of which can vary from study to study. "*This enables frequencies to be calculated, simple patterns to be observed and an approximate sequence of events to be noted"* (Cohen *et al.*, 2000, p.309). In the study by Ahonen *et al.* (1994) one interval consisted of 10 seconds of observation and 10 seconds of making notes. Antrop *et al.* (2005) used intervals of 3 minutes. During research by Lauth *et al*. (2006) in three classroom contexts, *"a time-sampling frame was employed and the behaviour of each student observed during predetermined 5 second intervals"* (p.391). In the present research 15-second intervals were used.

Design and use of FIS

Ayers *et al.* (1996) provide details of a Fixed Interval Sampling sheet, which can be used in the classroom to record behaviours in a series of equal time slots.

> *"The observer notes the predominant behaviour of the pupil for each 15 second interval of a total period of time …. In practice, this is usually done by observing for 10 seconds and recording for 5"* (Ayers *et al.,* 1996, p.24).

This sheet was modified for use in **Part 2** of the present research (and referred to as FIS). The left-hand side of the FIS sheet is made up of seven rows. These are divided into five-minute rows, each of which is subdivided into 15-second boxes or cells. The right-hand side of the schedule is made up of three behaviour columns, headed 'No ADHD' (0), 'Inattention' (1 – 9) and 'Hyperactivity/impulsivity' (10 – 18), and a further column entitled 'Behaviour according to DSM-IV criteria' which lists all 18 DSM-IV categories for ADHD with code '0' added for 'No ADHD behaviours'.

During observation periods the researcher coded each 15-second cell using one of the figures from 0 – 18. In practice, albeit very infrequently, it was sometimes necessary to make informed decisions as to the *predominant* behaviour displayed during each 15-second interval. Categorisation of behaviour could generally be narrowed down into one of the three main DSM-IV behaviour categories. On one single A4 sheet of paper (printed in landscape), the researcher had the recording sheet, the list of behaviours to refer to when coding and also boxes for the analysis. A copy of the FIS schedule is shown in Appendix **5.6,** with a set of instructions for use in Appendix **5.7**.

It was possible to use FIS in almost any setting over periods of varying duration. This was particularly useful on occasions when the length of a lesson was not known or was subject to change. The length of the recording periods throughout the six case studies over two years ranged from a minimum of 12 minutes to a maximum of 92 minutes, with an average of 43 minutes (see Appendix **5.8**). This technique could be used on occasions when for some reason there was no opportunity to observe simultaneously the target pupil and the comparison pupil (a requirement in ITS observation, see below). These situations included observations in a large school hall where the comparison pupil was not visible, or when the target pupil was working away from the main classroom in a small group with other pupils with SEN.

5.2.2 Instantaneous Time Sampling (ITS) (Appendix **5.9**)

In instantaneous time sampling the researcher codes what is happening at particular pre-determined moments in time rather than recording retrospectively what has occurred during a time period. By recording 'snapshots' of behaviour at particular instants for both the case study individual (target pupil) and a comparison (non-ADHD) pupil over fixed time periods, it was possible to ascertain whether each target pupil displayed numerically more frequently behaviours associated with ADHD than his comparison.

Instantaneous time sampling was one of the classroom observation methods used by Croll and his colleagues in large-scale school projects, for example, 'ORACLE' (Observational Research and Classroom Learning Evaluation), 'One in Five' (Croll, 1986) and 'PACE' (Primary Assessment, Curriculum and Experience) (Pollard *et al.,* 1994). ORACLE observers recorded observations at 25-second intervals. 'One in Five' and PACE researchers coded at 10-second intervals, using taped, pre-recorded 'bleeps'. More recently smaller scale studies have utilised this type of behaviour sampling in mixed methods designs (Lovey, 1998, 1999; Pester, 2002).

Design and use of ITS

Dr Sam Goldstein first introduced the 'TOAD' system,

> *"a simple four behaviour model that can be utilized in a classroom setting… to collect interval data on four classroom behaviours that are frequently problematic for ADHD children. The four behaviours are talking out, out of seat, attention problems and disruption"* (Goldstein and Goldstein, 1990, p.93).

By comparing the performances of selected pupils the observer is able to gather comparative quantitative data on the target pupil's behaviour as related to other pupils. This technique also enables quantitative comparison over time, so that improvement or decline can be recorded (Cooper and O'Regan, 2001).

Lovey's (1998, 1999) adaptation of TOAD enabled further comparisons to be made between a child suspected of displaying ADHD characteristics and a non-ADHD child. Both pupils were observed and the behaviours were recorded every 30 seconds for ten minutes in three lessons using a simple sheet (see Figure **5.1** below). Lessons involving different demands and settings were chosen, for example, English, maths and science or technology. It was usually possible to ascertain whether the target pupil displayed notably more talking (T), out of seat behaviour (O), attention problems (A) and disruption (D) than a child chosen as a control.

Figure 5.1. Classroom observation sheet (Lovey, 1999, p.181)

	Subject Pupil A				**Control** Pupil B			
	T	O	A	D	T	O	A	D
Lesson 1		✓						
Lesson 2								
Lesson 3								

It was decided to modify and extend Lovey's observation sheet for the present research (the schedule was later referred to as ITS). The ITS schedule includes a table listing all 18 ADHD DSM-IV criteria as itemised by Munden and Arcelus (1999). A further code of '0' was added for 'none of the above behaviours'. Lower down the schedule are spaces for 'date', 'time' and 'context'. There are three recording boxes at the bottom of the sheet consisting of ten-minute time lines with spaces for recordings for the target pupil and the comparison pupil at 30-second intervals. An analysis table is included at the bottom of the sheet. This means that, as on the FIS schedule, the researcher has on a single sheet: the recording boxes, the list of behaviours to refer to when coding and an analysis table. A copy of the ITS schedule is shown in Appendix **5.9**, with a set of instructions for use in Appendix **5.10**.

This technique was used in the present research over ten-minute periods to gather quantitative data on frequency, location and sequence of pupil behaviours. It was utilised whenever possible over three selected periods near to the beginning, middle and end of lessons in order to establish any patterns of behaviour relating to different parts of a lesson. In practice there were occasional difficulties if the length of the lesson was not known to the researcher beforehand. This type of observation was useful particularly in lessons which had distinct types of activity at different times, for example, the teacher's introduction or demonstration, a class discussion, a written activity, a practical activity of some sort, oral class recapitulation or question and answer session at the beginning or end of the lesson. Some adjustments and flexibility were often necessary here, for example, the researcher would wait until a science experiment was under way before starting the middle observation period. It was helpful if the format of the lesson could be discussed beforehand with the teacher, but this was not always possible in practice. It was not possible to adopt this type of observation during group lessons for literacy and numeracy as the target pupils were usually included in groups with other pupils with SEN and the non-ADHD pupils used as comparisons were in other groups.

5.2.3 Features common to both observation schedules

Design and use

- Croll (1986) suggests that a classroom observation schedule should be: *"practical to carry, read, write on and move to subsequent sheets"* (p.84). Both the FIS and ITS schedules take up one sheet of A4 paper, which easily fits on to a clipboard.

- Using set time periods provides consistency. A watch with a second hand was attached to the clipboard to ensure accuracy of timings (15-second intervals for FIS, recordings every 30 seconds over a period of 10 minutes in ITS).
- Both schedules include space for basic details of context, timings and analysis of recordings (see Appendices **5.6** and **5.9**). In addition, qualitative field notes were made to supplement the quantitative data gathered. This was particularly important in ITS where significant developments may have occurred in between the 30-second 'snapshot' recordings.
- A decision was made to use category '10' ***('fidgets with hands or feet or squirms in seat')*** for all types of fidgeting or movement not included in any other categories. These included leaning back with a chair on two legs, banging feet on the floor, fiddling with hair or clothing, and tapping a pencil or ruler on the table.
- There were unavoidably some occasions when during an observation period either the target pupil was briefly out of sight or the researcher was distracted by a TA, teacher or child. A decision was made to put a dot in the relevant recording box and not to include these in the analysis. Researchers using the PACE observation sheet used a recording of 'O' to indicate *"out of room/sight"* (Pollard *et al.*, 1994, p.52).
- A detailed set of instructions for using each observation technique has been drawn up (see Appendices **5.7** and **5.10**).
- As school visits were made on a regular basis teachers and pupils soon became accustomed to the presence of the researcher. An advantage of using just one observer was that it was possible to remain relatively unobtrusive in the classroom. Two observers might have produced *"greater interference with the natural situation"* (Colwell and O'Connor, 2003, p.123).

Modifications

A decision was made to use the term 'No ADHD' for recordings when there was no evidence of ADHD behaviours, rather than 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 later discovered that he was in fact engaged on some other activity, for example, drawing a picture instead of carrying out a writing task. Pester (2002) experienced something similar:

> *"Although R was coded as being 'on task' while working productively, he was in fact not participating in the lesson, but engaged in a less demanding activity of his own choice"* (p.224).

Research by Daniel & Cooper (1999) used 'on-task' and 'off-task' categories on an observation schedule which employed the antecedents, behaviour and consequences (ABC) approach to observing and analysing classroom behaviour (Ayers *et al.*, 1996). DuPaul and Stoner (1994) describe 'on-task' behaviour as positive student behaviour and define it as "*visual orientation towards assigned task materials for entire interval"* (p.59). They describe 'off-task' behaviour as negative and define it as "*visual non-attention to one's task or assigned behaviour"* (p.60). On the PACE child observation sheet, observers used the terms *"task engagement (apparent)"*, *"task management"* and *"distracted"* when recording child activity (Pollard *et al.*, 1994, p.52). Recordings made by Lauth *et al*. (2006) included two off-task behaviours and three on-task behaviours.

Comments on data analysis

When analysing the data on both FIS and ITS sheets, three behaviour columns headed 'No ADHD', 'Inattention' and 'Hyperactive/Impulsive' were used. This was mainly due to the fact that 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, 1994; Anastopoulos *et al.*, 1997) (see Chapter **3.4.3** for a discussion on the use of DSM-IV and ICD-10 diagnostic criteria).

Throughout the case studies recording was based on all 18 DSM-IV criteria (plus 0 for 'No ADHD'), and so, if at any time further analyses were required, more detailed data would be available. The same situation would apply if there were a need to convert the observation findings from DSM-IV to ICD-10 criteria.

5.2.4 Validity and reliability

As the classroom observation recording sheets were modifications of existing instruments, it was necessary for the researcher to establish the validity and reliability of the Fixed Interval Sampling (FIS) and Instantaneous Time Sampling (ITS) schedules (Rudestam and Newton, 2001).

Validity

The internal validity and coherence of the content of the items used in both FIS and ITS schedules is based on the use of the 18 ADHD characteristics described in DSM-IV, the most recent edition of the diagnostic criteria for ADHD (American Psychiatric Association, 1994). A regular updating process for DSM criteria takes into account such

factors as any new diagnoses, results of field trials and tests of validity (e.g. Lahey *et al.*, 1998). Every possible effort has been made to establish face validity and content validity in these quantitative observation methods.

Inter-rater reliability

In addressing issues of reliability in the current study there was a need to determine the extent to which observers agree in their coding or rating using the behaviour categories on the classroom observation schedules devised. Referred to as inter-observer reliability or inter-observer agreement (Robson, 2002), it was particularly important in this study as the classroom observations were undertaken by a single researcher. The focus was on the FIS technique but the same behaviour category codes are used in the ITS technique.

Method

Videotapes of children's classroom behaviour have been used in previous research to establish inter-rater reliability of observation instruments. Alban-Metcalfe *et al.* (2002) reported on a study of teacher ratings of ADHD in three cultural settings in which the observers responded to an *"identical stimulus"* (p.286), that is, a videotape recording of one nine-year old boy who had been diagnosed as having ADHD. They were required to rate the boy's behaviour using a 5-point rating scale on 4 categories: hyperactivity, inattention, impulsivity and peer relations. In a study by Daniel and Cooper classroom observations were carried out using an observation schedule which included behavioural categories adapted from the DSM-IV criteria for ADHD. To establish the reliability of the observational instrument, a videotape of classroom behaviour was used and *"two raters independently carried out observations of the same tape"* (Daniel and Cooper, 1999, p.207).

In the present research the observers involved in joint observation sessions were from educational backgrounds and were familiar with aspects of ADHD. Observer 1 was the researcher's college tutor and Observer 2 was an experienced special support assistant (an ex-colleague of the researcher). They each received a set of instructions and training in the use of the observation schedules and behaviour categories used in recording.

Observations of children's classroom behaviour on the selected videotape extracts were made by the researcher and the other observers on three occasions. Beginning in October 2002 the first joint observations were undertaken to coincide with the

commencement of the first phase of case study classroom observations. In October 2003 a similar approach was taken at the start of the follow up phase of the case studies. The final joint observations were carried out in October 2004 following the completion of the case studies.

Twenty-two short clips of videotape focusing on individual pupils were identified from three videos (BBC, 1992; DfEE, 2000; Uniview, 2003) (see recording sheets, Appendices **5.11, 5.12** and **5.13** for further details). This selection was based on DSM-IV criteria for ADHD and the researcher's judgement. In each extract it was possible to observe the chosen child for several seconds and, with the aid of the pause button on the video recorder, to make the recording of behaviour before fast-forwarding to find the next sequence. For each extract the predominant behaviour was independently coded on recording sheets using the 19 codes employed in both FIS and ITS observation (18 DSM-IV criteria for ADHD and 0 for 'no ADHD'). On occasions where it was not possible to pinpoint the actual DSM-IV criterion, a note was made of which of the three core ADHD symptoms was observed.

Difficulties

Initially obtaining suitable videos for joint observations presented challenges. Although it was not essential to have videos specifically of children who were known to have a formal ADHD diagnosis, it was necessary to identify suitable extracts which would demonstrate not only behaviours associated with ADHD but also some where the individual may appear to be 'on task' (or not displaying ADHD behaviours). At the outset, despite very extensive searches, there was only one suitable video available for the first joint observation session. On subsequent occasions two further videos had been obtained.

It was necessary to acquire footage which clearly showed individual pupils in mainstream primary classroom settings for periods of as near to 15 seconds as could reasonably be achieved. This was because classroom observations using FIS in the current study are based on 15-second interval sampling. It was decided not to adopt the ITS technique as this involves simultaneous observations of a target child and a comparison. It would have been extremely difficult to obtain suitable video extracts for this purpose.

Antrop *et al*. (2004) employed three independent observers in their classroom study. In the Primary Assessment Curriculum and Experience (PACE) project,

> *"reliability of the systematic observation schedule was established by means of pairs of observers coding simultaneously in classrooms that were not part of the research sample"* (Pollard *et al.*, 1994, p.50 – 51).

In the present research, in addition to the joint observations of video extracts, it had originally been intended to carry out similar joint observations in classroom settings, with the researcher and another observer monitoring the behaviour of a chosen child. In practice this proved too difficult to organise. One of the problems with 'real world research' is fitting in the requirements of a research study around everyday school routines (Robson, 2002). Teaching staff in the case study schools were unable to take part in any joint observations due to teaching commitments. As the only SENCO who did not have responsibility for teaching a class of her own, preliminary arrangements were made on several occasions with the SENCO in school 2 for joint classroom observations. She was enthusiastic about becoming familiar with the observation schedules for future use and instructions for both FIS and ITS were provided and discussed. Each time, something occurred to prevent joint observations taking place, for example an OFSTED inspection was carried out in the school in December 2003. This meant that she was required to devote more time than usual to preparing SEN documents and liaising with class teachers and teaching assistants. A decision was therefore made to focus on the use of identical video-recordings to establish inter-rater reliability (similar to the *"identical stimulus"* used by Alban-Metcalfe *et al*., 2002, referred to above).

Findings

An analysis was made of inter-rater observation recordings for all videotaped extracts during each joint observation session (see Appendix **5.14**). As in the PACE project, "*reliability coefficients* (were) *based on the occasions on which two observers agreed as a proportion of all observations made"* (Pollard *et al*., 1994, p.51). Croll (1986) states that some researchers prefer the term *"Observer Agreement Coefficient"* (p.150), and provides the following formula, which was utilised in the present research:

$$\text{“}P = \frac{Na \times 100}{Na + Nd}$$

Where P is the percentage agreement, Na is the number of occasions when the two observers use the same code and Nd is the number of occasions when they use a different code” (p.152).

There was a high percentage inter-rater reliability figure of 97% overall. On the small number of occasions where it was not absolutely clear which was the predominant behaviour, it was possible to reach 100% agreement on whether the behaviour displayed fell into the category of ‘inattention’, ‘hyperactivity/impulsivity’ or ‘No ADHD’.

Intra-observer reliability

As a further check, the video extracts referred to above were also used to establish ‘intra-observer reliability’, or ‘observer consistency’ (see Appendix **5.15**). This is the extent to which the researcher obtained the same results when rating the same behaviours on the video extracts on *different* occasions. The undertaking of intra-observer checks safeguards against ‘observer drift’, which can occur due to familiarity with the use of an observation instrument (Robson, 2002). This is similar to ‘category drift’ (Brown and Dowling, 1998), where the researcher’s interpretation of events may change slightly over time.

5.3 Self-esteem questionnaire

The self-esteem questionnaire used in the case studies in **Part 2** of the present research was adapted from the primary version of the ‘Lawseq’ questionnaire (Lawrence, 1996) (see Appendix **5.16**). The original format was retained with 16 questions, including 4 distractors, alongside of which are columns headed ‘Yes’, ‘No’ and ‘Don’t know’. The wording of six questions was amended slightly to clarify their meaning and to take into account the ages of the pupils interviewed. For example, question 7 was amended from *“Do you like writing stories or doing other creative writing?”* to *“Do you like writing stories?”* The original question 9 read *“Are you good at mathematics?”* This was changed to *“Are you good at number work?”* Question 12 on Lawseq reads *“Do you find it difficult to do things like woodwork or knitting?”* This was amended to *“Do you like making things?”* Such alterations will have changed the reliabilities and validities of the scale to an unknown extent.

Table **5a** shows the number of individual interviews which were undertaken during both the main and follow up phases in which the questionnaires were completed.

Table 5a. Number of self-esteem questionnaires completed

	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Totals
Main phase	34	27	25	30	29	30	175
Follow up phase	33	26	30	31	32	1*	153

(*See Chapter **13** – full follow up study was not possible. Questionnaire was administered to the target pupil only).

In some cases the researcher read out the questions and ticked the boxes according to the child's reply, and in others the child ticked the boxes. Some pupils were able to read the questions themselves before ticking the boxes. Several of the younger or less able pupils required more explanation from the researcher in order to understand some of the questions. A number of pupils took the opportunity to elaborate on some of their answers by giving examples and discussing them with the researcher, and so some interviews took slightly longer than others.

Self-esteem can be conceptualised in many different ways from different theoretical perspectives. Feelings of low self-esteem cannot be observed directly.

> *"There are very few methods of assessing self-esteem which can be considered to be sufficiently reliable and valid for the purpose of practical usage in the classroom"* (Lawrence, 1996, p.15).

It is important to bear in mind that these measures have limited reliabilities and validities. The children may not have completely understood the questions although care was taken to explain them in detail where required. Pupils (consciously or subconsciously) may have given the answers they thought were expected of them, offering *"socially acceptable responses"* (Anderson, 1998, p.165). The questionnaire was considered useful as a screening device. By calculating each pupil's self-esteem 'score' using Lawrence's scoring key, it was possible to identify any variability between the self-esteem measurements of the target pupils and their classmates both at one point in time and longitudinally. It was also possible to ascertain where in the individual class groups the target pupils appeared.

A sociometric question was added to the original questionnaire in order to arrive at some conclusions regarding social relationships in general, and peer rejection in particular for pupils who display ADHD characteristics (Kewley, 1999; Cooper and

Bilton, 2002; DuPaul and Stoner, 2003). Some children needed help with spelling or writing the names of their friends. "*Sociometry provides a reliable and systematic method for investigating peer relationships in different settings"* (Košir and Pečjak, 2005, p.127). Although it is a versatile technique (Robson, 2002), one of the weaknesses is that "*choices made alone and on paper can differ markedly from those made in real situations"* (Coolican, 1999, p.148).

Summary

This chapter has described the quantitative measurement techniques used in the present research. Chapter **6** provides an examination of the methodological approaches adopted, and includes details of sampling, procedure and data-gathering techniques employed in **Parts 1** and **2**.

Chapter 6

Methodological approach

Chapter **6** in is two parts. Section **6.1** outlines the methodological approach adopted in **Part 1** of the present research. The case study methodology used in **Part 2** is then described in **6.2**.

6.1 Part 1 – survey methodology

In this part of the chapter section **6.1.1** focuses on the methodological approach used in the original ADHD school survey in LEA 1, the study which focused specifically on pupils at KS1/KS2, and the comparisons with survey results from other LEAs. Details of population and samples are provided (**6.1.2**), as well as information on procedure (**6.1.3**).

6.1.1 Methodological approach

In **Part 1** of the present research, descriptive population statistics were obtained using a cross-sectional survey design to achieve a detailed overview of the incidence of ADHD in 2003 in the school population in LEA 1. Self-administered questionnaires were designed and used as described in Chapter **5**. Details of pupils at KS1/KS2 were then extracted and subjected to further analyses. By examining data from previous surveys comparisons were also made with selected findings in other LEAs.

6.1.2 Sample

2003 ADHD school survey

As it was not considered possible to obtain accurate *national* figures, the present research was concerned with obtaining a descriptive overview of *local* incidence figures for ADHD amongst school-aged children in an LEA. The approach adopted was similar to those used in surveys undertaken in four other LEAs (Ramsden, 1998; Cains, 2000; Holowenko and Pashute, 2000; Evans, 2004).

It was decided that all schools in LEA 1, namely all infant, primary, first, middle, secondary, high and special schools and pupil referral units (N = 273), constituted an accessible population, or designated group (Cohen *et al*., 2000). These details were taken from a 'List of Maintained Schools and Other Educational Establishments', obtained from the County Education Department and compiled in January 2003. Where

the population is readily identifiable, as in this case, *"given sufficient resources to contact every member of the designated group, sampling decisions do not arise"* (Cohen *et al*., 2000, p.173).

The number of schools in the survey was considered appropriate when the average number of schools in LEAs 1, 2, 3, 4 and 5 was found to be 256. The total school population in LEA 1 was 77,778. The average over the five LEAs was 79,502 (see Table **7l** in Chapter **7.5**).

KS1 and KS2 study

Details for mainstream pupils at KS1/KS2 with an ADHD diagnosis were extracted from the 2003 school survey findings for further analyses. There were 187 primary/first schools and 34 middle schools involved (N = 221). The total Y1 to Y6 school population in primary/first schools was 30,665, with 6,236 pupils in Y5 and Y6 in middle schools. This provided a total KS1/KS2 population in LEA 1 of 36,901. The average over the five LEAs was 41,950.

6.1.3 Procedure

2003 survey - dissemination

Following the undertaking of the survey as outlined in Chapter **5**, a report detailing the results was compiled by the researcher towards the end of 2003 and distributed to all schools and other interested parties with the help of LEA staff early in the spring term 2004 (Document **CD3**). The introduction written by the Senior Specialist Educational Psychologist included a summary of responses received from delegates attending the study day in 2003. There was also an analysis of the replies to the questionnaire item focusing on school training needs. The second study day was held at the University College on 22nd May, 2004 and included presentations involving discussions on the implications of the survey findings for LEA policy and practice. Delegates who attended the study days included teachers, TAs, educational and health professionals, students and parents.

KS1 and KS2 study

Using a document analysis approach, details pertaining only to primary, first and middle schools were extracted from the original 2003 schools database. Data from secondary and high schools, special schools and pupil referral units were not relevant, as the

specific focus of the KS1/KS2 study was on ADHD diagnosed pupils at KS1/KS2 in mainstream schools. It was then necessary to delete figures for pupils at Reception class level from primary and first schools and pupils at KS3 from middle schools. The coding key used in the 2003 survey was adopted in the KS1/KS2 study (Document **CD2**). A report was written in a similar format to the 2003 survey report, with a breakdown by questionnaire points. A table summarising the results from both the 2003 survey and the KS1/2 survey was compiled.

Comparisons with survey results from other LEAs

(i) A detailed point-by-point comparison was made between the results obtained by LEA 2 in 1998 and those obtained in the 2003 LEA 1 survey. A full report of this comparison was sent to LEA 2 and other interested parties within LEA 1.

(ii) When four further LEA surveys were subsequently discovered, a decision was made to make additional comparisons regarding ADHD prevalence rates, in an effort to discern any patterns of variability and also to ascertain how local figures compared with emerging published national rates of ADHD. These examined data on all schools and then specifically on pupils at KS1/KS2.

6.2 Part 2 – Case studies methodology

This part of the chapter will begin in **6.2.1** by offering a description of the case study research strategy used in **Part 2** of the present research. Section **6.2.2** will provide details of sampling and **6.2.3** will describe the case study procedure. Section **6.2.4** describes data gathering methods, with specific reference to ethical concerns and issues of validity and reliability where appropriate. A more general description of these issues has been provided in Chapter **4**.

6.2.1 Research strategy

The case study approach adopted in **Part 2** of the present research used both descriptive and exploratory elements (Yin, 2003). The phenomenon of interest was ADHD in boys attending mainstream primary schools. Six related instrumental case studies were selected to gather relevant information for analysis. In each case study descriptive qualitative details were used to provide accurate background information and to

supplement unique data gathered using quantitative techniques. This approach aims to provide data triangulation and methodological triangulation (Robson, 2002).

The emphasis was not on generalisation or hypothesis testing, but on seeking new insights and generating hypotheses concerning current identification and assessment procedures and situational variability in ADHD symptoms in schools. As can be seen in separate case study Chapters (**8 - 13**), each individual pupil was unique in terms of the combination of variables (see Table **6a**). Each school was unique in terms of organisation (see Appendix **6.1**), each class was unique in terms of its functioning and each teacher was unique in terms of teaching style and attitude. The schools have some features in common, for example they all have *"statutory duties to identify, assess and make provision for children's special educational needs* (and should) *have regard to"* the SEN Code of Practice (DfES, 2001a, p.iii). They all teach according to the National Curriculum (DES, 1988), but the delivery of this is unique to each class, teacher and school. The heterogeneity of all the variables meant that it was not possible to generalise the findings. Instead the aim was to describe each case, as clearly as possible. From these case descriptions hypotheses have been generated. As Willig (2001) states, *"Case studies focus upon the particular…. Each case study is unique even where it shares characteristics with other cases"* (p.84).

6.2.2 Sample

Based on the experience of a pilot case study carried out previously (not reported here), it was decided that, in order to allow sufficient time for comprehensive in-depth studies to be undertaken effectively, six individual case studies would be undertaken. Each of these would focus on a pupil who had received a formal diagnosis of ADHD. In practice it was not possible to gain access to six such pupils (see below). At the start of the research period three target pupils had been formally diagnosed. The other three displayed ADHD characteristics and had been put forward by teachers for assessment.

Identification of schools

It was decided to study pupils in mainstream schools throughout, rather than including special schools (where more support is available for pupils displaying ADHD behaviours) so that any comparisons made would be across schools of the same type. An earlier decision had been made to focus on pupils at primary school level, partly because this was the area of interest and expertise of the researcher. The primary school

setting, with the majority of teaching undertaken in one classroom by one teacher, was also considered to be more favourable to the requirements of carrying out regular observations.

The fact that both parts of the research were carried out concurrently meant that the **Part 1** survey details on schools reporting pupils diagnosed with ADHD had not been collated at the time when decisions were being made as to which schools would be suitable for the case studies in **Part 2**. Using information provided by local County Educational Psychologists, identification was made of mainstream schools in LEA 1 where there were known to be pupils with a potential diagnosis of ADHD. The researcher then made written contact with selected schools.

Schools of various sizes and with differing numbers of pupils on roll were selected in diverse parts of the LEA. By providing details of all schools in the case study, across a set of common attributes, Appendix **6.1** displays the heterogeneity of the chosen schools. It can be seen that numbers on roll ranged from 130 in a small first school to 540 in one of the middle schools. Differing numbers of pupils at SEN Code of Practice levels was another feature taken into account (DfES, 2001a). National average figures for pupils with SEN with statements in primary schools were 1.6% for both years. Without statements, the figures were 15.9% in 2003 and 16.1% in 2004 (DfES, 2004b). In the eight schools involved in the research, approximately half reported higher figures and half lower figures than the national averages in each year for SEN both with and without statements.

By considering the number of pupils eligible for free school meals (FSM), choices of schools were made in an attempt to reflect various socio-economic levels found in schools in different parts of the county. There was a wide range of numbers of pupils eligible for FSM, from a minimum of 3.5% to a maximum of 46.9%. Three schools had FSM figures that were higher than the national average of approximately 17% across the two years 2003 and 2004, and the other five had lower figures (DfES, 2004b).

Gaining access

Another important feature of the sampling procedure was whether school staff were willing for the researcher to undertake classroom observations on a regular basis over a school term for two consecutive years. Schools where previous contacts had been

established either by the researcher or by colleagues were approached. Schools 1 and 3 were suggested by the researcher's college tutor and members of the County Educational Psychology team recommended schools 2, 4 and 5. The researcher had had previous contact over several years with school 6. This included two short-term teaching contracts, work as a supply teacher and the undertaking of the pilot case study. Two of the individuals studied were in Y4 in first schools (schools 3 and 5) for the first year of the research study and moved to middle schools for Y5 (schools 7 and 8). When contacting these two schools, the formal written approach was maintained. In addition, the SENCOs in the first schools were able to offer assurances to their counterparts about the integrity of the researcher and the research undertaken during the first year of the study.

Individual pupils

Pupils were identified using a non-probability purposive (Cohen *et al*., 2000) or purposeful sampling design (Patton, 2002; Creswell, 2003). It was decided to focus on boys as published estimates of gender differences agree that boys diagnosed with ADHD outnumber girls (APA, 1994; Kewley, 1999). The findings of the survey later confirmed that the largest proportion (49%) of those pupils diagnosed with ADHD in LEA 1 were at KS1/KS2, with a boy:girl ratio of 9:1 (see **Part 1** results). Efforts were made to choose individuals covering as wide a spread of ages as possible within KS1/KS2. Boys were identified at different stages in the assessment process, both for SEN and ADHD, with some taking medication as part of their treatment (see Table **6a** for further details). In each case study a non-ADHD pupil was identified and used as a comparison during Instantaneous Time Sampling (ITS) observations (see **6.2.3** below).

(Insert Table 6a here)

6.2.3 Procedure

Main and follow up research phases

Two boys were studied over each school term during 2002/2003 (the main phase) and again over the corresponding term the following year (the follow up phase), 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. Details are shown in Table **6b.** When making decisions as to which term individuals would be studied, it was considered necessary to avoid observing boys in Y2 or Y6 during the summer term when National Curriculum SATs would be taking place. This was because there would be extra changes to the normal school timetable which might have unduly influenced the behaviour of individuals.

Table 6b. Case study dates

Case study		School	Main phase		School	Follow up phase
1	Ben	(Y3) School 1	Autumn term 2002 2 Sept – 20 Dec		(Y4) School 1	Autumn term 2003 1 Sept – 19 Dec
2	Carl	(Y5) School 2			(Y6) School 2	
3	David	(Y4) School 3	Spring term 2003 8 Jan – 11 Apr		(Y5) School 7	Spring term 2004 5 Jan – 7 Apr
4	Edward	(Y2) School 4			(Y3) School 4	
5	Freddy	(Y4) School 5	Summer term 2003 28 Apr – 23 July		(Y5) School 8	Summer term 2004 21 Apr – 16 July
6	Adam	(Y3) School 6			(Y4) School 6	Autumn term 2003* (first half)

(*See Chapter 13 – there was a problem with further follow up in the summer term 2004)

Instantaneous Time Sampling (ITS), one of the systematic observation techniques used throughout the research period, involved making comparisons between the variability in behaviours of target pupils (that is, those with an ADHD diagnosis, or displaying ADHD-type behaviours) and non-ADHD peers. It was therefore necessary to obtain normative classroom data. As this type of information was not readily available the class teacher in each case was asked to identify a same-sex classmate as 'typical' or 'average' as a comparison (Goldstein and Goldstein, 1990; DuPaul and Stoner, 2003). It was important that the individual teachers made the choice as "*the classroom level of acceptable behaviour … varies depending on a particular teacher's expectation and tolerance"* (Goldstein and Goldstein, 1990, p.93). Cases 1, 2, 4 and 6 took place within the same class cohort in the same schools and used the same comparison pupils. Cases 3 and 5 differed as David and Freddy moved from first to middle schools. It was therefore necessary to choose new comparison pupils in these cases. The pupils chosen as

comparisons were not included in the SEN Code of Practice assessment procedure. They were not perceived by the teacher as displaying ADHD characteristics.

Each case study was conducted using the same format. For both years of the study the researcher spent one day each week throughout the term in school. Observations using Fixed Interval Sampling (FIS) and Instantaneous Time Sampling (ITS) were undertaken in as many curricular settings as possible. Interviews with staff and pupils and document analysis were undertaken when convenient. The children were told that the researcher was an ex-teacher who was coming in to school one day a week to see what went on in the classroom.

At each initial meeting with the headteacher and/or SENCO arrangements were made for the researcher's first day in school. Delamont (2002) suggests that

> *"the opening days of a new academic year are especially productive for researchers, because rules are explicitly discussed, procedures explained and justified* (and) *social relationships are established"* (p.102).

In practice in the present research, usually at the request of school staff, the first two weeks of the autumn terms and the first few days of the spring and summer terms were avoided in order to allow teachers and pupils a 'settling down' period.

Discussions were then held with the class teacher in each case to arrange the visits on subsequent weeks. Attempts were made to cover every day of the week so as to include as many curricular contexts as possible. A certain amount of flexibility was necessary as the researcher had to fit in with any disruptions to the normal class and school routines and any specific requests from the teaching staff.

6.2.4 Data collection

Following the pilot case study the methodological process was evaluated, systematic observation techniques were refined (see Chapter **5.2**) and data gathering methods were evaluated for their suitability in the main and follow up research phases of **Part 2** of the present research. These are described below.

i) Field notes

Described by Patton (2002) as *"the fundamental database for constructing case studies"* (p.305), field notes were used extensively throughout each individual case

study. They 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) throughout the study in between periods of systematic observation to record qualitative information regarding background details; (c) to add further descriptions of contexts when systematic 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.

Using lined A4 sized sheets of paper, writing only on one side and noting down times in the margin, a similar strategy to that described by Brown and Dowling (1998) was adopted, with each sheet of field notes

> *"divided into two columns… On the left hand side a chronicle of events was written… On the right hand column the field workers made a note of their own ideas, links with other data and thoughts about preliminary analysis. At the foot of the fieldnotes …, a note was made of any additional information collected …"* (p.55).

Data analysis was an ongoing process throughout each case study. By reflecting on descriptions and analyses of field note recordings it was possible to highlight any information regarding key issues, methods of data collection, ethical concerns and contextual details. The field notes were *"an indispensable data source"* (Anderson, 1998, p.128) when used to supplement quantitative data and to offer insights into systematic observation results on the variability of ADHD behaviours. In addition, details of comorbid conditions and variability in identification and assessment procedures for SEN and ADHD were identified. This type of information was particularly useful in cross-case analyses of the findings following the completion of the six case studies.

ii) Interviews

Interviews may be used in any type of research approach, with the emphasis on *"fitness for purpose"* (Cohen *et al.*, 2000, p.270). A recent list of interview types includes: *"structured, semi-structured, unstructured/ informal, one-to-one, group/ focus group, telephone, e-mail and internet relay"* (Gorard, 2004, p.126). The type of interview employed depends on the kind of information required in any study. Interviews can range from an

> *"informal conversational interview* (in which) *questions emerge from the immediate context and are asked in the natural course of things,* (to) *closed quantitative interviews,* (where) *questions and response categories are determined in advance"* (Cohen *et al*., 2000, p.271).

In the present research two types of interview were used, informal conversational interviews with school staff and structured interviews with pupils involving the completion of questionnaires. These are described below.

School staff interviews

In each school several *"key informants"* were identified (Anderson, 1998), both before and during the case studies. There were some differences in staff responsibilities in individual schools, but usually the key informants included the class teacher; the SENCO and TAs and SSAs involved in supporting the case study individuals. In addition, other personnel were interviewed in some schools. Table **6c** provides a summary of key informants in each case study.

Table 6c. Summary of key informants interviewed throughout research period

		SENCO	Class teacher	TA (s)	SSA	HT	DHT	Other teacher (s)	Head of year
Case study 1	Main phase	I	D I	I	I	I	I	I	
	Follow up	I	D I	I	I	I	I	I	
Case study 2	Main phase	D I	I	I	I		I	I	
	Follow up	D I	I	I	I			I	
Case study 3	Main phase	*D I	I	I	I		*D I	I	
	Follow up†	D I	I	I	I			I	
Case study 4	Main phase	*D I	*D I	I			*D I	I	
	Follow up	*D I	D I	I	I		*D I	I	
Case study 5	Main phase	* I	**D I	I	I	* I	**D I	I	
	Follow up†	D I	I	I	I	I		I	D I
Case study 6	Main phase	D I	I	I		I		I	
	Follow up	D I	I	I		I		I	

† different school * ** In some cases, a member of staff performed more than one role
D – document provided
I – informed comments

Throughout the case studies, opportunities were taken for *"informal conversational interviews … the most open-ended approach to interviewing"* (Patton, 2002, p.342). These often occurred unplanned and took place at the beginning or end of lessons, over a cup of coffee, at lunchtime or at the start or end of the school day. Relationships were built up in which an exchange of information took place. Many of the teaching staff were keen to discuss the general concept of ADHD as well as their individual perceptions of the disorder. Discussions also focused on the school ADHD survey (see **Part 1**) and other details of the present research. In each school, the researcher was able to gather documented information and informed comments on the target pupil's

behaviour and associated difficulties, classroom interventions and the school's SEN assessment procedures. For those boys formally diagnosed with ADHD, details regarding diagnosis and medication effects were also collected. It was also possible to gather anecdotal evidence of relevant events that occurred on days other than those when observations took place.

Child interviews

In each case study during both the main phase and follow up phase, a class list was obtained from the class teacher. When convenient, individual pupils were removed from the main classroom area for a short interview with the researcher. The completion of the questionnaire rarely took longer than five minutes.

iii) Document analysis

General school documents which included policies on behaviour and SEN were examined as well as documents which particularly pertained to the case study individuals. Copies of Individual Education Plans (IEPs), together with letters and reports written by professionals from other agencies involved in the identification and assessment procedures for SEN and ADHD were obtained. Although these documents were designed for other uses, they proved valuable in supplementing background data gathered using other methods and in compiling histories from the beginning of each individual's school career. Bell (1999) refers to these documents as

> *"inadvertent sources, which are used by the researcher for some purpose other than that for which they were originally intended"* (p.109).

iv) Participant observation

During the pilot case study participant observation had been employed at times when the researcher adopted the role of classroom support teacher. The findings from periods of participant observation had proved to be limited, with very little further information being obtained. Consequently, a decision was made not to use this type of observation on a regular basis for the present research study.

During the two-year research period, there were two occasions when periods of participant observation were used. These were when the researcher was invited to accompany the class on school trips. On 18th October 2002 the Y3 class in school 1 attended a day of activities at a local church. The Y5 group in school 2 were taken on a

trip to the local theatre on 10th December 2002. These excursions proved to be most enjoyable and informative. It was necessary to adopt the position of *"participant as observer* (in which the) *observation role* (was) *secondary to the participant role"* (Creswell, 2003, p.186). A shorthand notepad was used to record notes in the form of words or phrases to be used as an aid to recalling events when fuller accounts were written as soon as possible afterwards (Cohen *et al.*, 2000).

v) Systematic observation

The development and use of the two systematic observation schedules, Fixed Interval Sampling (FIS) and Instantaneous Time Sampling (ITS), have been described in Chapter **5.2**. Both were used extensively in all six case studies in as many curricular contexts as possible, over different days of the week and at different times in the term. Observations usually began after the first few minutes of each lesson which were generally regarded as settling down periods. This procedure was also adopted in classroom observations undertaken by Lovey (1999) and Lauth *et al*. (2006). There were inevitably occasions when it was not possible to observe in every curriculum area for each target child. 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 (history, geography and Religious Education (RE)).

Validity and reliability

General issues of validity and reliability have been addressed in Chapter **4.** Details concerning the validity and inter-rater reliability of the systematic observation schedules have been provided in Chapter **5**. "*The greater the number of observations, the greater the reliability of the data might be"* (Cohen *et al.*, 2000, p.314). Large-scale studies with several observers are able to undertake many more hours of recording than small-scale studies. For example, 750 hours of videotapes were coded in the 'One in Five' study and 2,500 hours in 'ORACLE' (Croll, 1986). The reliability of the present research findings was enhanced by the longitudinal element of the case studies. 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 and 75 hours 40 minutes of ITS observation were undertaken by one observer over two years. Tables **6d** and **6e** show detailed breakdowns by cases of the actual number of recordings made.

(Insert Table 6d here)

(Insert Table 6e here)

SECTION III – RESEARCH FINDINGS

PART 1 - SURVEY

Chapter 7

Survey results

This chapter will begin by presenting the results from the 2003 ADHD school survey in LEA 1 (section **7.1**). The next section concentrates on school training needs identified in LEA 1 (**7.2**). Section **7.3** focuses on a comprehensive comparison between the findings of the 2003 survey in LEA 1 and those of the 1998 survey undertaken by LEA 2. The results from the KS1/2 study, which used extracted data from the 2003 survey, are then detailed (**7.4**). Section **7.5** offers an overview of selected results from five LEAs. Hypotheses (previously defined as 'suppositions that can be tested') meriting further study are generated in the following areas: incidence of ADHD; multi-professional identification, assessment and management of the disorder; school training needs; and comorbid or associated difficulties. A summary of these is provided. Following this chapter, findings from the case studies in **Part 2** will be presented. Chapters **8 – 13** describe individual case studies. Cross-case analyses of the findings are provided in Chapter **14**, together with relevant generated hypotheses.

7.1 Results from 2003 ADHD school survey

The full report on the original ADHD school survey undertaken in 2003 in LEA 1 is available in Document **CD3**. A summary of the findings from both the 2003 survey and the KS1/2 study is shown in Table **7b**. In the 2003 survey amongst all school types responses were received from 256 schools reflecting a response rate of 94%. It can be seen from Table **7a** below that the highest proportion of returns was from the largest group, the primary and first schools. The total response sample represents a population of 74,085 pupils or 95% of the local school population of 77,778.

Table 7a. Response rates by school type (all schools)

School type	Total number of school type	Total number of school returning questionnaires	Total number of schools not replying	Percentage school response rate
Nursery schools	001	000	01	0
Primary/first schools	187	183	04	98.0%
Middle schools	034	032	02	94.1%
High schools	029	027	02	93.1%
Special schools	013	008	05	61.6%
Pupil referral units	009	006	03	66.7%
TOTALS	273	256	17	94.0%

Table 7b. Results for 2003 survey and KS1/KS2 study (N and %)

		2003 all pupils	KS1 and KS2 mainstream pupils
1	**Response rate:**	94% (256/273 schools)	97% (215/221schools)
2	**Number of schools returning ADHD students**	151	111
3	**Number of pupils diagnosed with ADHD**	413	191
4	**Incidence per 1000 school population**	5.3 (0.53%)	5.2 (0.52%)
5	**School types (having ADHD students on roll):**	Number of students:	Number of students:
	Primary/first:	169 (40.9%)	153 (80%)
	Middle:	76 (18.4%)	38 (20%) (KS2)
	Sec/High:	127 (30.8%)	
	Special:	32 (7.7%)	
	PRU:	9 (2.2%)	
6	**Gender of ADHD students:**		
	Male:	365 (88.4%)	177 (93%)
	Female:	39 (9.4%)	14 (7%)
	NK:	9 (2.2%)	
	Boy:girl ratio	9:1	9:1
7	**Proportion of ADHD students in different key stages:**		
	Reception:	17 (4.1%)	
	KS1:	50 (12.1%)	45 (23%)
	KS2:	152 (36.9%)	143 (75%)
	KS3:	129 (31.2%)	
	KS4:	54 (13%)	
	NK:	11 (2.7%)	3 (2%)
8	**SEN stages:**		
	SA:	91 (22%)	48 (25%)
	SA plus:	152 (36.8%)	75 (39%)
	In process of SA:	17 (4.1%)	9 (5%)
	Statemented:	92 (22.3%)	39 (20%)
	NK:	61 (14.8%)	20 (11%)
9	**Medication taken at home (if known):**	56%	30%
10	**Age at diagnosis:**		
	NK:	252 (61%)	93 (49%)
	Under 5:	29 (7%)	14 (7%)
	5 to 9:	102 (24.7%)	80 (42%)
	10 to 11:	11 (2.7%)	4 (2%)
	Over 11:	19 (4.6%)	
11	**Diagnosed by:**		
	NK:	75 (17.5%)	31 (14%)
	Paediatrician:	143 (33.4%)	93 (44%)
	Psychiatrist:	91 (21.2%)	41 (19%)
	GP:	76 (17.7%)	30 (14%)
	ABC clinic:	13 (3%)	5 (2%)
	Other:	31 (7.2%)	14 (7%)
	***Totals include multiple responses**	429*	214*
12	**On medication:**	75%	77%
	Known to be taking Ritalin/Concerta:	88%	93%
13	**Positive changes with medication:**	61%	65%
14	Comments on changes included a range of responses, mostly positive		
15	**Schools asked to complete questionnaire *prior to* diagnosis:**	23%	37%
16	**Schools asked to complete questionnaire *after* diagnosis:**	8%	11%
17	**Pupils not achieving educationally at age level:**	47%	56%
18	**Pupil has other SEN:**	70% (mostly EBD, then general LD)	72% (mostly EBD, then general LD)
19	**Schools reporting other pupils who might have ADHD:**	92	68

Incidence

In 151 schools there were 413 pupils reported as being formally diagnosed with ADHD. This represents 0.53% of the total school population, i.e. 5.3 pupils per 1000 (0.56% of responding schools, 5.6 pupils per 1000). A total of 92 schools (36% of those who responded) reported at least one other pupil on roll who might have ADHD.

Table 7c. Diagnosed ADHD pupils - breakdown by national curriculum (NC) year group

National curriculum year			Key stage (KS)		
Year	**Number of pupils**	**%**	**Key stage**	**Number of pupils**	**%**
Reception	17	4.1	-	17	4.1
1	17	4.1			
2	33	8.0	I	50	12.1
3	29	7.0			
4	43	10.5			
5	49	11.9	II	152	36.9
6	31	7.5			
7	45	10.9			
8	52	12.6	III	129	31.2
9	32	7.7			
10	34	8.2			
11	20	4.8	IV	54	13.0
12+	0	0			
Not known*	11	2.7		11	2.7
Total	413	100		413	100

*Pressure of work prevented a very small number of respondents from providing full details.

The overall ratio of boys to girls identified was 9:1. By providing details of National Curriculum (NC) year groups, Table **7c** provides a breakdown by age. The highest proportion of diagnosed pupils was at KS2. The combined figure for KS1 and KS2 was 49% of the overall total. Case studies undertaken in **Part 2** of the present research focused on six pupils at these key stages.

Multi-professional identification, assessment and management of ADHD

The highest percentage of pupils (37%) was at the 'school action plus' stage of the SEN Code of Practice procedure (DfES, 2001a). Of the 22% with a Statement of SEN it is not known if any of these were specifically for ADHD. Schools reported that 47% were not achieving educationally at their age level and 70% had other SEN.

The highest proportion of pupils had been diagnosed with ADHD between the ages of 5 – 9 years and paediatricians had diagnosed 33% of cases. Of the 75% of diagnosed pupils taking medication, 88% were known to be taking methylphenidate (Ritalin or Concerta). The use of slow-release drugs such as Concerta, which are taken once daily in the morning, is reflected in the figure of 56% of pupils who take their medication at home. Positive changes with the medication were reported in 70% of cases. Only 23%

of schools were asked to complete a questionnaire prior to diagnosis being made by a clinician and only 8% after diagnosis.

7.2 School training needs

In order to inform ADHD policy decisions within LEA 1, two approaches were used to ascertain the specific training needs identified by school staff. Firstly, pertinent questions were included on the 2003 ADHD questionnaire (Appendix **5.1**). Secondly, delegates attending the two ADHD study days were each asked to complete a feedback form identifying any outstanding questions or concerns on ADHD.

Survey questionnaire

The last two items on the 2003 ADHD school survey questionnaire referred to relevant training. Staff in 12% (N = 31) of the schools that responded to this question indicated that they had received some training. Invited to tick as many boxes as appropriate, of the 211 responses to the question: *What kind of training would be most useful?*

- 36% (N = 76) requested an information pack,
- 34% (N = 72) asked for a twilight session,
- 16% (N = 34) asked for a whole day's training and
- 14% (N = 29) asked for a support group.

Delegates' feedback from study days

The feedback forms included in the delegates' packs were in three parts designed to elicit as much information as possible (Appendix **7.1**).

(A) Before the programme started, delegates were asked to list up to three questions concerning ADHD that they would like to be addressed during the day's programme.

(B) They were then invited to indicate at the end of the day how well each of the questions had been addressed. A five-point Likert-type scale was used ranging from 'excellently' to 'not at all'.

(C) 'Looking to the Future' – asked for the most pressing concerns about provision for the education of pupils with ADHD.

Table 7d. Analysis of evaluation sheets from ADHD Study days

	Study day 1 March 2003		Study day 22 May 2004	
Number of delegates attended	175		50	
Number of evaluation forms completed	(N = 107) 61%		(N = 46) 92%	
(**A) Total number of questions posed in this section at the start of the day**	216		136	
(B) Number and percentage of above:	**N**	**%**	**N**	**%**
• answered during the day adequately or better	171	79%	101	74%
• not answered during the day adequately or better*****	45	21%	35	26%
***Unanswered questions focused on:**				
• Strategies	13	28%	6	18%
• Aetiology and progress of ADHD	5	12%	-	-
• Awareness and understanding	4	10%	-	-
• Parent issues	4	10%	-	-
• Liaison between health authority, LEA and others	2	4%	4	10%
• Training	1	2%	4	10%
• Diagnosis and related issues	4	8%	3	8%
• Inclusion	2	4%	3	8%
• Issues in secondary education	-	-	3	8%
• Post 16 issues	-	-	3	8%
• Drugs and medication	3	6%	1	3%
• Provision, resources, support	2	4%	1	5%
• Social services involvement	-	-	1	3%
• Comorbidity	-	-	1	3%
• TAs	-	-	1	3%
• Alternative treatment	-	-	1	3%
• Diet	1	2%	-	-
• Other	4	10%	4	10%
	N	**%**	**N**	**%**
(C) Looking to the future – most pressing concerns:	50	100	58	100
These focused on:				
• Provision, resources, support	10	21%	18	31%
• Awareness and understanding	8	15%	16	28%
• Inclusion	9	19%	2	3%
• Training	5	11%	2	3%
• Liaison	4	7%	5	10%
• Strategies	4	7%	2	3%
• Parent issues	4	7%	-	-
• Class management/consistency	-	-	3	5%
• Diagnosis and related issues	2	4%	-	-
• Drugs and medication	2	4%	1	2%
• Issues in secondary education	-	-	2	3%
• Aetiology and progress of ADHD	1	2%	-	-
• Post 16 issues	-	-	1	1%
• Other	1	3%	6	11%

Table **7d** provides a detailed analysis of responses from the two study days. Although there were fewer delegates in 2004 it can be seen that the highest percentage of the questions unanswered at the end of each day's programme focused on 'strategies' in both cases (28% in 2003 and 18% the following year). This might indicate that the majority of the audiences were teachers and TAs who were interested in practical advice for coping with pupils with ADHD in the classroom. A wider number of issues were identified in 2004, possibly due to increased awareness of the disorder (see section B).

The two highest percentages for most pressing concerns listed in section C show a similar pattern over the two years. Issues of 'provision, resources and support' were uppermost in the minds of delegates looking to the future. Interestingly the percentage rose from 21% in 2003 to 31% in 2004. The same applied to issues of 'awareness and understanding of ADHD', with an increase from 15% the first year to 28% in 2004. An increased emphasis on inclusive education and the publication of the Green Paper *Every Child Matters* (DfES, 2003) could account for this trend, together with an increase in knowledge and understanding of ADHD.

Action taken

A presentation entitled *Practical Strategies for Including Pupils with ADHD in the Mainstream Classroom* by a Senior Specialist Educational Psychologist and members of the LEA behaviour support team was included in the 2004 study day programme. An ADHD information booklet entitled *Supporting Teachers and Parents of Pupils with Attention Deficit Hyperactivity Disorder* had been compiled and copies were handed out to delegates. At a later date the booklet was made available to staff in the local Access and Inclusion Service to give out to schools when appropriate. Parents at a local Parent Partnership roadshow who attended an ADHD workshop were also provided with copies of the same booklet. Feedback about the booklet from both the Access and Inclusion Service and parents has been positive. At the time of writing (2006) an updated version of the booklet is planned. A twilight course has been developed. This is delivered as part of an Access and Inclusion Service programme to schools at their request.

7.3 Comparison between LEA 1 and LEA 2 survey results

This section compares the results of the 2003 ADHD school survey in LEA 1 and the LEA 2 survey undertaken five years earlier (Ramsden, 1998). The two LEAs had similar sized school populations and the response rates were practically identical. Table **7e** summarises the results of the comparison which are shown in full in the report in Document **CD4**. The majority of questions were straightforward to compare although there were five minor differences. The categories were not directly compatible in question 8 (due to different Codes of Practice in operation), question 9 (due to slight variations in personnel who administer medication) and question 11 (due to differences in local agencies who diagnosed pupils). Information was not included by LEA 2 on the breakdown of 'description of SEN' in question 18, or on the 'number of schools reporting other pupils on roll who might have ADHD' in question 19 (see questionnaire in Appendix **5.1**).

Table 7e. Comparison of results for 1998 survey in LEA 2 and 2003 survey in LEA 1 (N and %)

	Analysis of survey questionnaires sent to all schools	**1998 LEA 2**	**2003 LEA 1**
1	Response rate:	184/194 schools 95%	256/273 schools 94%
2	Number of schools returning ADHD students:	100 (54%)	151 (59%)
3	Number of pupils diagnosed with ADHD:	235	413
4	Incidence per 1000 school population:	3.8% (0.38%)	5.3 (0.53%)
5	School type with highest proportion of ADHD students on roll: Primary/first/junior:	122 (52%)	169 (41%)
6	Boy:girl ratio of ADHD students:	9:1	9:1
7	Key stage with highest proportion of ADHD students: KS2:	100 (43%)	152 (37%)
8	Proportion with statement of SEN:	85 (36%)	92 (22%)
9	Known to be on medication:	184 (78%)	311 (75%)
10	Highest proportion - age at diagnosis: Age 5 to 9	79 (54%)	102 (63%)
11	Highest proportion diagnosed by: Paediatrician:	88 (37%)	143 (33%)
12	Highest proportion medication type:	Ritalin 164 (89%)	Ritalin/Concerta 274 (88%)
13	Positive changes with medication:	149 (81%)	217 (70%)
14	Comments on changes included a range of responses, mostly positive		
15	Schools asked to complete questionnaire *prior to* diagnosis:	71 (30%)	96 (23%)
16	Schools asked to complete questionnaire *after* diagnosis:	48 (20%)	31 (8%)
17	Pupils not achieving educationally at age level:	140 (60%)	193 (47%)
18	Pupil has other SEN:	130 (55%)	290 (70%)

Incidence

The number of students with an ADHD diagnosis and the corresponding incidence per 1000 of the school population showed an increase in 2003. This could have been due to an increased awareness of ADHD or differences in diagnosis procedures. The gender ratio remained at 9:1 boys to girls. In both surveys the highest proportion of diagnosed students attended junior/primary/first schools and were at KS2.

Multi-professional identification, assessment and management of ADHD

The proportion of students with a Statement of SEN was lower in 2003 as was the percentage of those not achieving educationally at their age level. However, the proportion of students considered by schools to have other SEN rose from 55% in 1998 to 70% in 2003.

In both surveys the highest proportion of students had been diagnosed with ADHD between the ages of 5 – 9 years and paediatricians had diagnosed the highest percentage of cases. The number of pupils known to be on medication was similar in both surveys at 75 – 78%. Of these, 89% were reported as taking Ritalin in the 1998 survey and 88% were taking Ritalin/Concerta in 2003. Schools in both surveys reported mostly positive changes in the behaviour of students taking medication. In 1998 school staff supervised the daytime doses of medication in 87% of cases. In the 2003 survey this figure had decreased to 44% as more medication was taken at home. Concerta, an extended release form of methylphenidate, taken once a day, was approved in the UK by the Medicines Control Agency in February 2002 (*Special Children*, 2002). In examining multi-disciplinary approaches to treatment it can be seen that the percentages of schools asked to complete questionnaires both *prior to* and *after* diagnosis were lower in 2003 than in 1998.

In a comparison of this sort it is important to bear in mind the following points which could have influenced any differences in the results:

- the five-year gap between the two surveys;
- increases in awareness of the disorder;
- the LEAs were in different parts of the country;
- changes in government legislation and guidance which may have contributed to differing identification and assessment procedures for SEN; and
- local differences in diagnostic procedures for ADHD.

7.4. KS1 and KS2 study

Data used in tables in this section have been taken from the KS1/KS2 study report (provided in full in Document **CD5**). The report was based on the analysis of information extracted from the 2003 ADHD survey data from all schools within LEA 1. Itemised points from both the 2003 survey and the KS1/2 study are contained in Table **7b**.

Responses were received from 215 out of a total of 221 primary, first and middle schools (97%). The details in Table **7f** below have been extracted from Table **7a** which refers to all schools (see earlier section **7.1**).

Table 7f. Response rates by school type (KS1/2 pupils)

School type	Total number of school type	Total number of school returning questionnaires	Total number of schools not replying	Percentage school response rate
Primary/first schools	187	183	04	98.0%
Middle schools	034	032	02	94.1%
TOTALS	221	215	06	97.0%

Incidence

The number of schools returning ADHD students at KS1/KS2 (NC years 1 – 6) was 111. There were 191 pupils with a formal ADHD diagnosis. This corresponds to 0.52% of the total KS1/KS2 mainstream school population (5.2 pupils per 1000). However, 68 schools (32% of those who responded) reported at least one other pupil on roll who might have ADHD. If 68 were added to 191, this would total 259 with a diagnosis (0.7% of the total KS1/KS2 school population).

Table 7g. Breakdown by national curriculum year group (KS1/2 pupils)

National curriculum year			Key stage		
Year	Number of pupils	%	Key stage	Number of pupils	%
1 2	16 29	08 15	I	45	23
3 4 5 6	29 41 43 30	15 21 23 16	II	143	75
Not known*	03	02		03	02
Total	191	100		191	100

*Pressure of work prevented two respondents from providing full details.

There were 153 identified pupils in primary and first schools and 38 in middle schools. The total number of 191 pupils was made up of 177 boys and 14 girls, giving an overall ratio of boys to girls of 9:1. By providing details of key stages and NC year groups, Table **7g** provides a breakdown by age.

Table 7h. SEN Code of Practice stages (ADHD diagnosed KS1/2 pupils)

Code of Practice stage	Number of pupils	Percentage
School action	48	25%
School action plus	75	39%
In process of statutory assessment	09	05%
Statemented	39	20%
Information not given	20	11%
Total	191	100%

Table **7h** shows that the highest percentage of ADHD pupils (39%) was at the 'school action plus' stage of the SEN Code of Practice procedure (DfES, 2001a). Statements of SEN had been issued for 20% of pupils. Schools reported that 56% of diagnosed pupils were not achieving educationally at their age level and 72% had other SEN. Comorbidity is the simultaneous existence of two or more different conditions. Pupils with ADHD are likely to experience co-existing or comorbid disorders, the symptoms of which may overlap (Pliszka *et al*., 1999). Responses to the question regarding the description of other SEN confirm that there is evidence of comorbidity in pupils with ADHD, and in some cases, multiple comorbidity (see Table **7i**). It can be seen that the highest number of pupils experienced Emotional and Behavioural Difficulties (EBD), with the second highest proportion reported as experiencing general learning difficulties.

Table 7i. Description of other SEN reported in pupils diagnosed with ADHD

Description of SEN	Number of pupils
Learning difficulties (general)	71
Emotional and Behavioural Difficulties	101
Physical disabilities	10
Sensory difficulties	5
Speech and language difficulties	29
Specific learning difficulties	23
Autistic Spectrum Disorder	21
Total	260* (*This includes multiple comorbidity)

It can be seen from Table **7j** that for 49% of pupils at KS1/2 diagnosed with ADHD schools were unable to provide information regarding the age at which they were diagnosed. This figure may seem high, but there are many cases where a child may have been diagnosed when attending a previous school and the relevant information does not appear on current school records. Another possibility is a lack of effective liaison between the health and education services. The highest percentage of those where details are provided were in the 5 – 9 years age group.

Table 7j. Age at diagnosis (KS1/2 pupils)

Age at diagnosis	Number of pupils	Percentage
Not known/ not given	93	49%
Under age 5	14	07%
Age 5 to 9	80	42%
Age 10 to 11	04	02%
Total	191	100%

Most ADHD diagnoses were made by paediatricians. The figures shown in Table **7k** may indicate that schools do not always have accurate information regarding diagnosis of ADHD, in some cases relying on parents to provide details. Multiple responses were recorded on some questionnaires, possibly pointing to a lack of knowledge on the part of school staff as to who makes the diagnosis.

Table 7k. Proportion of KS1/2 pupils diagnosed by different agencies

Diagnosed by	Number of pupils	Percentage
Not known/not given	31	14%
Paediatrician	93	44%
Psychiatrist	41	19%
GP	30	14%
ABC clinic	05	02%
Other	14	07%
Total	214**	100%

**Includes multiple responses

Of the 77% of diagnosed KS1/KS2 pupils known to be taking medication, 93% were reported to be taking Ritalin or Concerta. School staff were responsible for administering medication in 63% of cases and 37% were known to take their medication at home. The use of Concerta, the slow-release form of Ritalin, was becoming more widespread in 2003. One dose is taken at home in the morning, and there is no need for a lunchtime dose to be taken in school. Positive behaviour changes with the medication were reported in 69% of cases. Examples of these included: *"calmer", "more focused", "improved concentration", "less aggressive"* and *"less fidgety"*. Little or no difference was identified in 12% of cases. A small proportion of comments were phrased negatively, for example: *"less involved"* and *"zombie-like"*. Details of changes were not known or not provided in the remaining 19% of cases.

37% of schools were asked to complete a questionnaire prior to diagnosis being made by a clinician. The Conners checklist (Conners, 1997) made up 50% of these and

multiple responses were provided in some instances. Although 32% reported definitely that they were not asked, in the remaining 31% of cases the answer to this question was either not provided or recorded as 'not known'. Following diagnosis only 11% were asked to fill in a questionnaire, 53% reported a definite 'no' and 36% were recorded as either not known or not given.

7.5. Comparisons with survey results from other LEAs

An examination was made of variability in local ADHD incidence rates and other selected findings from six school surveys in five LEAs. It was not possible to undertake a more in-depth, point-by-point comparison due to the differing LEA survey formats and questionnaires. The KS1/KS2 figures were extracted and analysed further where possible.

Incidence

Table **7l** provides details of ADHD prevalence rates in six surveys across five LEAs in England. These ranged from 0.2% to 1.1% of the total school populations, giving an average figure of 0.5%. By taking into account the number of schools in LEA 1 who reported at least one other pupil on roll who might have ADHD, the estimated incidence would be nearer 1% of the total school population. Similarly, in LEA 4,

> *"schools' own estimates of prevalence rates are approximately two and one-half times higher (1%) and in this regard may appear to indicate that the condition is underdiagnosed"* (Holwenko and Pashute, 2000, p.188).

Table 7l. ADHD prevalence rates across LEAs

LEA, year of survey	Total number of schools circulated (ALL schools)	% response rate	Total school population (ALL schools)	Number of pupils with ADHD diagnosis (ALL schools)	% of total school population with ADHD diagnosis	School population – KS1 and KS2	Number of pupils at KS1 and KS2 with ADHD diagnosis	% of KS1 and KS2 population with ADHD diagnosis
LEA 1 2003	273	94%	77,778	413	0.5	36,901	191	0.5
LEA 2 1998	194	95%	72,920	235	0.3	38,242	135	0.4
LEA 3 1998	310	54%	114,940	239	0.2	61,310	173	0.3
LEA 4 1999	362	65%	95,196	240	0.3	56,452	159	0.3
LEA 5a 2000	139	Not known	58,970	346	0.6	30,485	217	0.7
LEA 5b 2004	139	79%	57,210	619	1.1	28,310	286	1.0

NB In order to ensure consistency, all school population figures were taken from the official DfES statistics website and may differ slightly from individual published survey figures

Following the survey in LEA 5b which found that 1.1% of the total school population had a diagnosis of ADHD, a calculation of imputed values was made in an effort to take into account those schools not returning questionnaires. This produced a higher estimated figure of 1.6% pupils attending schools in the LEA who might have an ADHD diagnosis (Evans, 2004).

In all surveys the highest proportion of pupils diagnosed with ADHD was at KS2. The boy:girl ratio was 9:1 in surveys in LEAs 1, 2, 3, 4 and 5a and 7:1 in LEA 5b. Figures pertaining specifically to KS1/KS2 have been extracted for further analysis (see Table **7n** below).

Multi-professional identification, assessment and management of ADHD

In all surveys the majority of cases were diagnosed by paediatricians or child psychiatrists. It can be seen from Table **7m** that a similar percentage of those diagnosed were taking medication (there was no information provided in the LEA 5b survey). LEAs 1, 2, 3 and 4 reported positive changes with medication (LEA 5a did not include this information).

Table 7m. Pupil numbers on medication across LEAs

LEA	1	2	3	4	5a	5b
Known to be on medication	311 (75%)	184 (78%)	182 (76%)	192 (80%)	260 (75%)	-

The survey findings in LEAs 1, 2, 3, and 4 highlighted difficulties in multi-professional working in the area of ADHD. In particular LEAs 1 and 2 reported low percentages of schools asked to complete a questionnaire both prior to and after diagnosis (see section **7.4**). The survey in LEA 3 asked schools to evaluate the effectiveness of the liaison between education and health. The highest school response percentages reported *"liaison as insufficient"* in three areas: *"35.5% for diagnosis of ADHD…39.1% for devising support and intervention …38.6% for follow-up work"* (Cains, 2000, p.172). Open-ended responses in the LEA 4 survey indicated a need for greater collaborative working and shared information between outside agencies and schools (Holowenko and Pashute, 2000).

On this question, the findings from the survey in LEA 5b differed from the other LEAs. Following the LEA 5a survey in 2000 it was decided that there was a need for improved

joint working between health and educational professionals. In 2001 four professionals were designated to work with ADHD: an ADHD specialist teacher appointed by the LEA, two ADHD specialist nurses from the Community National Health Service (NHS) trust and an ADHD therapeutic worker from the Child and Adolescent Mental Health Service (CAMHS). There followed improvements in the multi-disciplinary referral pathway for assessment, diagnosis and management of ADHD. By the time of the LEA 5b survey in 2004, results indicated an increased awareness of ADHD and a higher level of liaison between health and education professionals (Evans, 2004).

School training needs

School training needs in LEA 1 have been discussed in detail in section **7.2**. In LEA 4, in response to a question regarding knowledge and information available on ADHD, 64% of schools reported that they did not have adequate information. Many requested information on coping strategies and behaviour management strategies, in-service training and general updates on new research and information (Holowenko and Pashute, 2000).

There are no direct references to school training needs in LEAs 2, 3 or 5. However, teachers in LEA 3 reported, *"poor class management and inconsistent* (teaching) *style* (was) *increasingly having a bearing on behaviour…"* (Cains, 2000, p.163). This suggests a need for relevant training and information on ADHD. In LEA 5, following the instigation of the referral pathway mentioned above, 75% of schools reported that they were confident about school-initiated ADHD referrals (Evans, 2004).

KS1 and KS2

Prevalence rates were between 0.3% and 1% of the KS1/KS2 pupils across the six surveys (see Table **7l**). The data contained in Table **7n** allow for a more detailed comparison of numbers of pupils at KS1/KS2 with an ADHD diagnosis. There is a breakdown by NC year group and key stage. The details for LEA 1, 4 and 5a also show a breakdown by gender, but this information was not provided on the remaining surveys. In each survey the number of pupils at KS2 with a diagnosis of ADHD was the highest percentage of the overall total. In surveys in LEAs 1, 4 and 5b the highest pupil numbers with a diagnosis were in Y5 and in LEAs 2, 3 and 5a the highest were in Y6.

(Insert table 7n here)

Summary of hypotheses developed in Part 1

Incidence of ADHD

- Local incidence rates of ADHD are 0.5% – 1% of total school populations, dependent on methods of identification.
- Incidence of ADHD appears to be highest in pupils at KS1 and KS2.
- Using the same identification procedures, more boys than girls are diagnosed with ADHD.

Multi-professional identification, assessment and management of ADHD

- Most pupils who receive a diagnosis of ADHD appear to do so between the ages of 5 – 9 years.
- The majority of pupils diagnosed with ADHD may be prescribed medication as part of their treatment.
- Positive changes may be produced with medication in most cases.
- The integration of children's services may lead to improvements in liaison between health and education services.

School training needs

- Teachers would welcome training in the identification and management of ADHD.

Comorbid/associated difficulties

- Pupils diagnosed with ADHD may experience a range of comorbid or associated difficulties.

PART 2 – CASE STUDIES

Introduction to case study chapters

Chapters **8 - 13** each begin with details of school and classroom settings (see also Appendix **6.1**) and a standard summary of biographical information on target and non-ADHD comparison pupils. Further details of collected information on target pupils have been provided in Table **6a.** In presenting the findings from previously described mixed data-gathering methods, all six case study chapters provide information which focuses on two main areas.

Firstly, information is supplied on the identification and assessment of each target pupil's (i) SEN, and (ii) ADHD, from the beginning of his school career and throughout the case study period, with a brief comment on his situation following the case study period. Each case study includes a detailed table which has been compiled using qualitative information obtained from interviews with school staff and document analysis.

Secondly, using an analytical framework based on the results of systematic observations, details of within-child variability observed in ADHD symptoms are presented for each case study. Throughout the present research, non-ADHD behaviours were recorded as 'No ADHD', rather than 'on task', as detailed in Chapter **5.2.3**.

In focusing on the observed variability in ADHD symptoms *across curricular contexts*, selected extracts from extended summaries of observation periods, using both Fixed Interval Sampling (FIS) and Instantaneous Time Sampling (ITS) techniques, are described in detail. Some extracts illustrate both curricular and longitudinal variability. ITS observations also enable comparisons to be made with a non-ADHD pupil and between different parts of selected individual lessons. Field notes are used to supplement quantitative data and offer insights into some of the systematic observation results. Throughout these sections ***bold italics*** are used when reference is made to individual DSM-IV diagnostic criteria for ADHD (APA, 1994).

Two tables provide full details of all recordings of observations (numbers and percentages) over a two-year period, using FIS and ITS techniques. Analyses of percentages for behaviours of each target pupil *over time*, including transition to a new class, key stage or school, are provided, beginning with FIS observation results. Some

cases include further FIS analyses to illustrate particular aspects of longitudinal variability in ADHD symptoms. ITS scores also compare the overall behaviours of target pupils and comparison pupils over time.

There follows a brief section on co-existing conditions associated with ADHD, for example poor social skills and problems with the concept of time. Each chapter concludes with a short summary of the specific findings.

Following the separate chapters describing the individual case studies, Chapter **14** provides details of cross-case analyses of the findings. These explore variability in both the identification and assessment processes and ADHD symptoms in schools, together with associated problems experienced by the target pupils. Hypotheses generated in these areas are summarised. It is important to be aware of possible limitations and the need for caution when identifying differences and situational variability in behaviours. Although the issue of inter-rater reliability of the observation schedules has been addressed (see Chapter **5.2.4**), the results submitted in the present research are based on descriptions of one observer's findings. Replication of this study by others in equivalent contexts would enhance confidence in the findings.

Chapter 8

Case study 1: Ben

8.1 School setting

School 1 is a large community first school with approximately 420 pupils on roll in 2002/2003 and 2003/2004, made up of 15 mixed ability classes in a three-form entry from Reception to Y4. The percentage of pupils on roll eligible for free school meals (FSM) was above the national average as was the proportion of pupils included on the SEN Code of Practice stages. Children enter school with standards which are below average for the local education authority (OFSTED, 2003a). Results in 2002 in national tests at the end of Y2 were above the national average in reading, writing and mathematics. There were no pupils recorded as having a formal ADHD diagnosis in 2003.

8.2 Classroom setting

The KS2 block of the school contains the three classes in each year group as well as a separate Information and Communication Technology (ICT) room. Each class has one teacher in overall charge, although the year groups are split into ability sets for literacy, numeracy and, since September 2003, science lessons. The majority of other curriculum areas are taught by the class teacher. The Y3 or Y4 groups join up on occasions to work together, for example in music workshops working with a peripatetic music teacher.

The case study was undertaken in a mixed ability class of 34 children in Y3, and the same cohort minus one child the following year. This number is higher than the national average KS2 class size in primary schools (DfES, 2004b). In Y3 Ben was included in SEN groups for both literacy and numeracy lessons. These groups consisted of 12 pupils in the literacy group and 15 for numeracy. Daily lessons were taken by an experienced SEN teacher who was supported by a teaching assistant (TA). The pupils in Y4 were divided into four ability sets for literacy, numeracy and science. Ben was included in the lowest ability set (4/4) in each subject. These were the smallest sets, each made up of 14 or 15 pupils. In both Y3 and Y4 Ben was also included in a weekly group of 4 to 6 pupils taken by an experienced TA to work in a withdrawal area on speech and language skills and social skills.

8.3 Ben

Ben lived with his mother, stepfather and younger sister. His natural father had died some years ago and Ben seemed to get on well with his stepfather who made a point of taking him fishing and to football matches. Ben was very keen on both watching and playing football and attended the after-school football club. He also enjoyed the after-school computer club. During the second year of the case study he attended a karate club and joined the school guitar club as a beginner. He had his own guitar, had learned some basic chords and seemed to be progressing well. One of the younger members of the class, Ben was aged 7 years 3 months at the beginning of his time in Y3 when the case study began. In Y4 non-statutory tests, Ben achieved level 3a in reading (with support), level 2c in writing and 2a in mathematics.

Harry (non-ADHD comparison)

Harry was aged 7 years 9 months at the beginning of the case study period. He lived with his parents and a baby sister. He attended after-school clubs for football, rugby and pottery. In Y4 he was in sets 2/4 for literacy, numeracy and science. In Y4 non-statutory tests he achieved 2a in reading, 3c in writing and 3b in maths.

8.4 Findings

8.4.1 Identification and assessment process

Table **8a** provides a summary of the SEN identification and assessment process undertaken throughout Ben's pre-school and school history. At the time of the case study he had not been formally assessed for a diagnosis of ADHD. There are references to ADHD-type behaviours as well as comorbid features such as speech and language difficulties and poor social skills.

Table 8a. Identification and assessment process - Ben (highlighting agencies involved)

Date	(Page 1 of 2) Prior to case study period SEN Code of Practice	ADHD diagnosis
1998	**Pre-school** Parent reports *"Could not settle at playgroup – had to stop him going"* *"Does not like things which have loud noises".* **Nursery** *"…can be reluctant to focus on adult-led activity",* *"He rarely plays with others … can play rough".*	**No formal ADHD diagnosis**
Sep 1999	**Reception** **Early Years Profile: summary sheet** Areas for further development included: • Encourage self-confidence • Create more situations for Ben to talk • More opportunities to develop fine motor skills.	
Jun 2000	**Early Years report** *"has found it difficult at times to work collaboratively in groups."*	
Sep 2000 **Jan 2001**	**Year 1** **SEN stage 1** **Individual Education Plan (IEP) (action plan) – causes for concern:** • Behaviour – reluctance to interact with his peers • Conflicts possible as Ben is unsure of how to behave in a group. **Target areas:** • Ensure he interacts with others at playtime • Should contribute more willingly to group activities Use of behaviour timetable – teaching staff to note positive, negative behaviours during the day.	
Mar 2001	**Informal SEN assessment, school nurse** • *…was in a state of 'perpetual motion' with associated attentional difficulties..* • *poor phonological skills, auditory sequential memory, visual perception/ discrimination ..* • *.. generally immature for age … had a noticeable problem with instructions which would suggest processing difficulties* • *fine motor control problems, unco-ordinated* Suggests multi-sensory teaching methods, with visual emphasis.	
Jul 2001	**IEP Review** • …behaviour has improved .. communication between parents and teachers has made a huge difference to Ben's stability • Still unsure of how to treat others & rules of social conventions.	
Sep 2001	**Year 2** **SEN – School Action stage** **IEP (2) targets include:** • To sit still for 10 minutes without fidgeting • Avoid deliberate physical contact with others.	
Mar 2002	**IEP (3) targets include:** • Play with others in an appropriate manner • Sit properly on chair • Ignore other pupils who try to provoke him.	
Jul 2002	**School Action form** *"Displays some unusual behaviour…put on stage 3 (School Action Plus)".*	

Date	(Page 2 of 2) Case study period SEN Code of Practice	ADHD diagnosis
Sep 2002 **Oct 2002** **Dec 2002** **May 2003** **Sep 2003** **Feb 2004**	**Year 3** **School Action Plus stage** **IEP Area of concern: literacy** **Targets include:** • Wait for his turn to speak • Listen to other people. **Proposed support:** Speech and language, social skills – small group work with **TA.** **Learning Behaviour and Support Service (LBSS) assessment** Referred because of poor attainment, difficulty in concentrating and difficulty with making friendships Class teacher reports that his social skills have improved, gained in confidence Parent: *"He was very shy but is getting better. He is a big boy for his age and can be clumsy"* **Available school input:** in a small group with much assistance for literacy and numeracy. **Findings include**: poor visual memory for words. Will need much scaffolding to confidently produce independent writing. Left-handed, holds pencil with a tense grip, often has head on table. Will include some handouts of exercises. **IEP targets include:** • Listen when others are speaking • Take his turn in discussions. **Proposed support:** Speech and language, social skills – small group work with teaching assistant (**TA**). **Year 4** **IEP** Main areas of concern – literacy.	
Following case study period		
July 2004 **Sep 2004**	**Informal conversation with teacher:** *"Ben's behaviour is becoming more difficult to control".* **Year 5** Starts local middle school.	

8.4.2 Variability in ADHD symptoms

i) Variability across curricular contexts

Fixed Interval Sampling (FIS)

Both qualitative and quantitative data contain references to Ben displaying many of the diagnostic criteria for all three core ADHD symptoms. The extracts contained in the following two tables (taken from extended FIS summaries in Appendices **8.1** and **8.2**) illustrate variability across contexts and in one case over time as well.

Table **8b** highlights selected settings where Ben achieved low figures for ADHD behaviours and correspondingly high percentages of 'No ADHD' behaviours.

Table 8b. Extracts from Fixed Interval Sampling Analysis (a)

Date, time, duration of recording period	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inatt	H/I
(i) **Thu 14 Nov 02** 13:17 – 91mins	364	**History** – n = 90, then 34. Y3 watch video; discuss then design poster; ICT	78%	9%	13%
(ii) **Wed 27 Nov 02** 09:13 – 57 mins	228	**Literacy** – group from Y3, n = 12. Cut & stick activity; handwriting; Big book, non-fiction ('Snakes')	90%	3%	7%
(iii) **Mon 24 Nov 03** 09:09 – 61 mins	244	**Numeracy** – group from Y4, n = 14. Recap HTU; practical and written multiplication sums	87%	9%	4%
(iv) **Thu 11 Dec 03** 10:36 – 70 mins	280	**ICT** – n = 20 from across Y4, in ICT suite. Each child customises and prints off a photo of themselves for a calendar	81%	8%	11%

(**i**) For the class history lesson on 14th November 2002 Ben achieved 78% 'No ADHD' behaviours. This recording period was made up of several different activities, none of which involved a lot of writing. It began with Y3 watching a video of a history programme about the Second World War in Ben's classroom. Even though there were opportunities for Ben to become distracted, with approximately 90 pupils sitting on the classroom floor, he was totally focused on the television throughout the programme. After the children from the other Y3 classes had left, Ben's class stayed on the carpet for a teacher-led discussion about the programme and also about designing and making a 'Dig for Victory' poster. During this session Ben became more ***fidgety*** and had ***difficulty sustaining attention***. When the class worked on their individual posters, Ben had either ***not listened*** to the teacher or had ***had difficulty in following instructions***, and he had copied the teacher's example from the board instead of designing his own poster.

> *" 14:10 (Note: Even though he hasn't done exactly as the teacher asked, she gives him a sticker and plenty of praise and encouragement)"* Extract from field notes 14th November 2002.

(**ii**) Ben usually performed well in the literacy group during the main phase in Y3. He achieved 90% 'No ADHD' behaviours on 27th November 2002 during a well-planned lesson which involved a variety of activities. There were only a few recordings for Ben's ***fidgeting*** or ***difficulty sustaining attention***. These lessons were taken by an experienced SEN teacher with the support of a TA. One of the boys in the group had a statement of SEN, which meant that he received SSA support. Although the teacher had overall responsibility for teaching the group, there was a good adult:pupil ratio. At times she was able to split the group into smaller sets for part of the lesson, thus ensuring more individual adult attention when required. The SSA worked with Ben's group and made sure each pupil had their own glue stick, thus pre-empting any difficulties with taking turns.

(**iii**) (See also '**v**' below for longitudinal variability). On 24th November 2003, during the follow up year, Ben achieved 87% 'No ADHD' behaviours during a Y4 numeracy lesson, which included oral, practical and written approaches to multiplication sums. The work was divided into small chunks throughout. Most of the occasions where Ben ***fidgeted*** or had ***difficulty sustaining attention*** were when the teacher had to reinforce a concept or strategy for the rest of the group. The researcher observed many instances where the teacher praised Ben's improving numeracy skills and gave a boost to his self-esteem. For example, on one occasion Ben had recognised a pattern to working out subtraction sums:

> 10:06 *"Teacher tells the group: 'Ben can work out the answers without using a number square or counters. He's a 'maths magician'!"* Extract from field notes, 23rd September, 2003.

(**iv**) Ben enjoyed working on the computer. During the ICT lesson on 11th December 2003 he achieved 81% 'No ADHD' behaviours. The group of 20 was made up from pupils across the Y4 group. The lesson was taken in the ICT suite by the ICT co-ordinator. Most children automatically sat with a partner to work on the computers but Ben chose to work on his own. After a few recordings of Ben's ***difficulty sustaining attention*** at the beginning of the lesson when the teacher explained the activity, he settled down to work. The teacher offered Ben plenty of support throughout the lesson,

and on one or two occasions Ben was happy to call over to other pupils who offered him peer support. Most of the 11% 'hyperactive-impulsive' behaviours were recorded. towards the end of the lesson when Ben ***fidgeted***, spun round on his chair or ***moved around the room***. These were usually when he had ***difficulty awaiting his turn***, waiting for the teacher's attention.

Table **8c** focuses on settings where high percentages for ADHD behaviours were recorded for Ben.

Table 8c. Extracts from Fixed Interval Sampling Analysis (b)

Date, time, duration of recording period	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inatt	H/I
(v) **Tues 19 Nov 02** 10:45 – 56 mins	224	**Numeracy** – group from Y3, n = 15. Worksheets, practical division activity, number facts	52%	17%	31%
(vi) **Thu 12 Dec 02** 10:37 – 60 mins	240	**Xmas concert rehearsal** – KS2 in school hall, prior to church concert	43%	11%	46%
(vii) **Tues 11 Nov 03** 10:33 – 68 min	272	**Music** – singing workshop, Y4 classes worked with music teacher. Prepared for a performance.	36%	45%	19%
(viii) **Mon 24 Nov 03** 13:19 – 35 mins	140	**Geography** – Y4 class work in pairs for Bingo game – match symbols to names of features on maps	39%	42%	19%

(**v**) (See **'iii'** above). There were three adults working with the group of 15 children on 19th November 2002, enabling the teacher to split the group into three smaller groups of five for part of the lesson. On this occasion the SSA who would normally work with Ben's group of five had been replaced by a temporary, less experienced SSA and Ben was not used to working with her. He achieved only 52% 'No ADHD' behaviours. He had ***difficulty sustaining attention***, often ***fidgeted*** and leaned back on two chair legs throughout much of the lesson. It was clear that at times he ***did not appear to listen***, sometimes made wild guesses and ***blurted out answers***.

> 11:16 *"When asked what 12 shared between 2 makes, he impulsively answered 14 (Researcher's comment – he's adding instead of dividing)"* Extract from field notes, 19th November, 2002.

(**vi**) On 12th December 2002 the KS2 classes were practising in the school hall prior to performing a Christmas concert in the local church at a later date. Ben joined in the choruses and songs he was familiar with but had difficulty in reading the words for other hymns, which were displayed on a screen by an overhead projector. He was very ***fidgety***, had ***difficulty sustaining attention*** and achieved only 43% 'No ADHD'

behaviours. He was sitting on the end of a row and so he had room to move his legs around on the floor. An added factor on this particular day was that it had been raining during the morning prior to this rehearsal, which meant that Ben and his classmates had had no opportunity to run around at playtime. This might account for some of the 46% 'hyperactive-impulsive' behaviours displayed by Ben (the highest number recorded in the study).

(**vii**) On 11th November 2003, a peripatetic music teacher came in to work with the Y4 pupils on a 'singing workshop'. This involved the practising of songs which would later be part of a performance to be held in the local town hall. The children were in one of the classrooms as the school hall was unavailable on that day. They were tightly packed into the room and Ben found ***difficulty sustaining attention*** for much of the lesson. There was an added distraction on that day as the roof above the classroom was being repaired and it was possible to hear the workmen. This led to a high proportion of recordings where Ben was ***easily distracted by extraneous stimuli***. The figure of 45% for 'inattentive' behaviours was the highest recording overall, and he only managed to achieve 36% 'No ADHD' behaviours.

(**viii**) The geography lesson on 24th November 2003 was taken by a Y4 teacher who knew Ben well as he was in her numeracy group. The teacher divided the class into pairs but reported afterwards to the researcher that the pairing of Ben with a more able girl had not worked as well as she had hoped. Following the teacher's introduction, the informal lesson took the form of a Bingo game. After cutting out the symbol pictures each pair was required to match these up with the corresponding words of features found on maps. This less structured type of lesson often presented problems for Ben, especially when he appeared uncertain as to what was required, resulting in only 39% 'No ADHD' behaviours and 42% inattentive behaviours, mainly for Ben's ***difficulty sustaining attention*** and his being ***easily distracted by extraneous stimuli***.

Instantaneous Time Sampling (ITS)

The extracts shown in Table **8d** are taken from extended analysis summaries (see Appendices **8.3** and **8.4**).

Table 8d. Extracts from Instantaneous Time Sampling Analysis

Date, time at which 10-minute recording period began, (recordings made at 30-second intervals), part of lesson	Lesson	Recordings out of 20					
		Target pupil Ben			Comparison Harry		
		0	Inatt	H/I	0	Inatt	H/I
(ix) Mon 14 Oct 02	**Art** – Y3 class						
13:18 – (short period prior to swimming)	Draw 'Bonfire night' picture	19	1	0	19	1	0
(x) Thu 12 Dec 02	**Art** - Y3 Christmas activities						
13:16 – Start	Intro, class on carpet	3	7	10	15	3	2
13:46 – Middle	Calendar picture, using pastels	10	6	4	16	4	0
14:18 – End	'Cut and stick' worksheet	13	6	1	17	3	0
(xi) Mon 24 Nov 03	**ICT** -Y4 stained glass windows						
1146 – Start	T demonstrates task	7	13	0	19	1	0
1156 – End	Use 'Dazzle' to work on task	13	4	3	16	4	0
(xii) Mon 24 Nov 03	**RE** – Y4 'special journeys'						
13:59 – Start	Recap part of Christmas story	7	5	8	14	4	2
14:09 – Middle	T reads more of the story	8	5	7	14	6	0
14:19 – End	Writing, drawing task	14	4	2	16	3	1
(xiii) Thu 11 Dec 03	**DT** - Y4 design 'siege machine'						
09:25 – Start	Intro to design activity	6	10	4	13	6	1
09:48 – Middle	Ideas, diagram – siege machine	11	9	0	14	6	0
11:52 – End	More on above	17	2	1	14	6	0

(**ix**) Ben enjoyed creative activities and usually achieved high figures for 'No ADHD' behaviours in art lessons. In Y3 on the afternoon of 14th October 2002 children were taken out of the classroom in groups to go swimming while the rest carried on with the art lesson. Ben enjoyed swimming and was keen to go but he was still able to focus on drawing a 'Bonfire night' picture. For the 10-minute observation period he matched Harry's score of 19/20 for 'No ADHD' behaviours. This was Ben's highest figure overall for 'No ADHD' behaviours.

(**x**) Ben's figures for the Y3 art lesson on 12th December 2002 differed from the above extract. It had rained for most of the day (see FIS extract (**vi**) above). The lunch playtime immediately preceding this art lesson had been wet. Ben's lowest overall score of 3/20 'No ADHD' behaviours was recorded at the start of this lesson when the class sat on the carpet for the teacher's introduction to the lesson He had a great deal of ***difficulty sustaining attention,*** was ***easily distracted by extraneous stimuli*** (often looking out of the window) and ***fidgeted*** on the carpet. His 'No ADHD' scores for the middle and end of the lesson increased to 10 and 13 when he was engaged in the two activities. Harry's 'No ADHD' scores for the three corresponding recording periods were 15, 16 and 17.

(**xi**) As previously mentioned, Ben usually worked well on the computer. At the beginning of the Y4 lesson on 24th November 2003 he achieved only 7/20 'No ADHD' behaviours (compared to Harry's 19), with his highest recorded score of 13 for 'inattentive' behaviours. Ben's literacy set was the last to arrive in the ICT room. He quickly sat at a computer and was anxious to start using it. He had great ***difficulty sustaining attention*** when the teacher used the large screen in explaining to the class the activity involving the design of stained glass windows. Consequently, he also had ***difficulty in following through instructions.*** Later in the lesson when engaged in the activity he achieved 13/20 'No ADHD' behaviours, comparing more favourably with Harry's 16.

(**xii**) On the same day as the above extract, the class sat at their tables throughout the RE lesson, which began with the teacher giving a recap of the Christmas story and handing out maps on which Christmas journeys were to be recorded. During the middle recording period the teacher went on to read the next part of the story. Ben constantly ***fidgeted*** and fiddled with pencils, a ruler and a rubber band, which the teacher unobtrusively moved out of his reach when possible. He had ***difficulty sustaining attention*** and achieved only 7 and 8/20 'No ADHD' behaviours compared to Harry's 14 and 14. During the final recording period Ben was one of a group required to draw four pictures to illustrate the story and to write a sentence. The teacher gave him some individual support, prompting him by asking pertinent questions and offering plenty of praise and encouragement. This resulted in his scoring of 14/20 'No ADHD' behaviours, compared to Harry's 16.

(**xiii**) During the penultimate week of the autumn term 2003 there were several changes to the normal school routine, which may have affected Ben's behaviour. On 11th December the Y4 class began the morning with a Design and Technology (DT) lesson based on a previous history topic of 'The Romans'. In the first recording period the teacher explained the 'challenge' for the individual members of the class – to design and make a 'siege machine' that would fire the furthest. Ben had ***difficulty sustaining interest***, scoring 10/20 'inattentive' behaviours and only 6 'No ADHD' behaviours. Several members of the class found it difficult to pay attention at the start of this lesson, possibly as they were used to beginning each day in numeracy and literacy groups. Harry's 'No ADHD' score of 13/20 was lower than his average. For the middle session, Ben sought help from the SSA as he either had ***not listened*** or had ***difficulty in***

following through instructions. He then settled to the task and went on to score 11, compared to Harry's 14/20 'No ADHD' behaviours. The third recording period for this lesson took place later in the morning, following playtime and an ICT lesson for some of the year group (see FIS extract '**iv'** above). Interestingly, Ben returned to the DT task with enthusiasm and scored 17/20 'No ADHD' behaviours, compared to Harry who only managed 14.

(Insert Table 8e here)

(Insert Table 8f here)

ii) Variability over time

Tables **8e** and **8f** provide details of observation recordings over both research phases. The transition from Y3 to Y4 had a mixed effect on Ben and his behaviour, especially in the literacy and numeracy group lessons, as can be seen from comments included in FIS observation analyses (below).

Fixed Interval Sampling (FIS)

The information included in the following figures has been taken from the more detailed Table **8e**. It can be seen in Figure **8.1** that over all of the FIS observations recorded during the case study across all settings, the proportion of a lesson Ben spent displaying 'hyperactive/impulsive' (hyp-imp) behaviours fell slightly from 19% of the total recordings in the main phase (Y3), to 13% in the follow-up phase (Y4). Figures for 'inattention' were considerably higher during the follow up phase, rising from 10% to 21% and 'No ADHD' behaviours decreased from 71% to 66%.

Figure 8.1. FIS recordings over time (all settings) – Ben

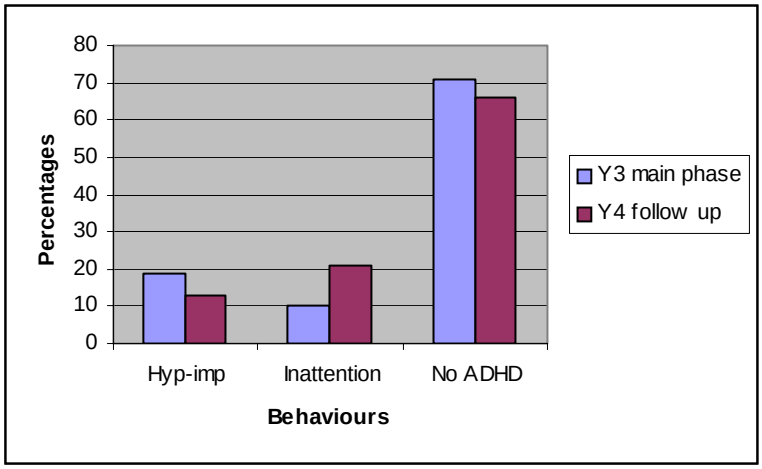


Figure 8.2. FIS recordings over time (literacy group) – Ben

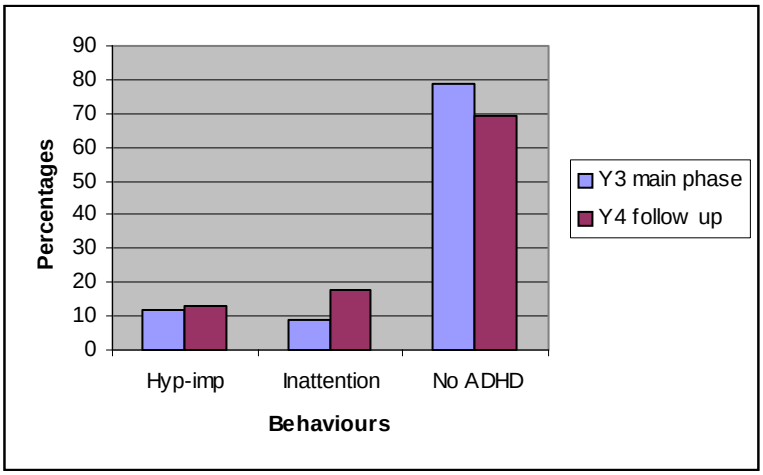
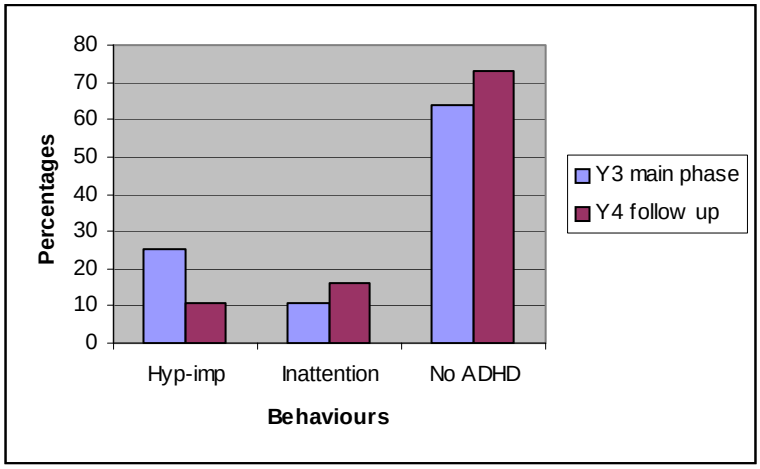


Figure **8.2** shows a slight increase in Ben's FIS recordings for 'hyperactive-impulsive' behaviours in the Y4 literacy group (from 12% to 13%). There was a noticeable increase in 'inattentive' behaviours (from 9% to 18%) and the proportion of 'No ADHD' behaviours was correspondingly lower in Y4 (69%) than in Y3 (79%). This may have been due in part to the relationship between Ben and his teachers. The Y3 group was taken by an experienced SEN teacher. The Y4 group was a taken by the deputy headteacher (DHT) who often adopted a humorous approach in the lessons. Ben did not seem to understand the banter that was often exchanged. (It was interesting to note his *increased* performance when working in the small Speech and Language group taken by an experienced TA).

Figure 8.3. FIS recordings over time (numeracy group) - Ben

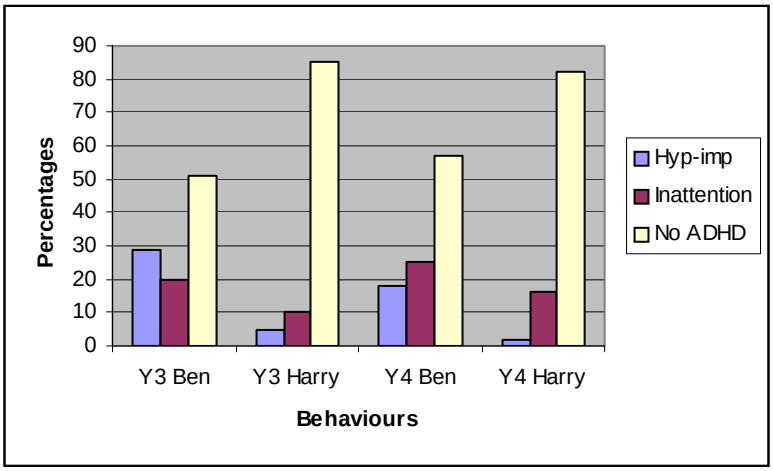


The reverse to the above applied in the 'No ADHD' figure for group numeracy lessons. This *increased* from 64% in Y3 to 73% in Y4 (see Figure **8.3**). 'Hyperactive-impulsive' behaviours decreased from 25% to 11% and 'inattentive' behaviours increased from 11% to 16%. The Y3 numeracy group contained 15 children, several of whom displayed a variety of challenging behaviours. Although the same SEN teacher took both literacy and numeracy groups with a similar amount of support it could be seen that in numeracy lessons there were more distractions than in literacy lessons. This meant that Ben often had ***difficulty sustaining attention*.** Following reports from the Y3 numeracy group teacher to the SENCO, there was a change in the make-up of the group in Y4. More of the children with more challenging behaviours received individual adult support. Ben developed a particularly good relationship with the Y4 numeracy group teacher and she reported to the researcher that his skills and confidence had shown improvement.

Instantaneous Time Sampling (ITS)

It is more difficult to discern differences over time when examining ITS analyses than in the FIS analyses detailed above. This may be due to the nature of each type of observation (see Chapter **5** for details). Figure **8.4** shows that Ben's recordings for 'hyperactive-impulsive' (hyp-imp) behaviours decreased from 29% to 18% of the total recordings in the second year, and 'inattentive' behaviours increased from 20% to 25%. His score for 'No ADHD behaviours' increased from 51% to 57%, compared with Harry's 85% and 82% (more details are provided in Table **8f**).

Figure 8.4. ITS recordings over time – Ben and Harry (comparison)



8.4.3 Associated difficulties

Self-esteem

Ben appeared to have a high self-esteem compared to the majority of his classmates, with only slight variability over time. Although his score from the self-esteem questionnaire decreased from 21/24 in the main phase to 18/24 the following year, his score on both occasions was higher than the class average (16 the first year and 17 on follow up). His score of 21 the first year was joint second highest in the class. The following year Ben was one of 10 pupils whose score showed a slight decrease (17 children had an increased score and the scores of 6 pupils remained the same as in the main phase).

Social relationships

No one chose Ben as a playmate when answering the sociometric question added to the questionnaire. He was often clumsy and occasionally aggressive towards his peers and had poor social skills. Slight progress was made following efforts made by the Y3

teacher to pair him up with a 'buddy' at playtimes. In Y4 he made friends with one boy in his class and they began going to each other's house to play. On two occasions when KS2 watched a pantomime performance in the school hall, it was noted that Ben did not seem to understand the concept of audience participation. For example:

> *"13:35 Looks bemused when other children jump up, shout 'Boo' at the 'baddy' …*
> *13:45 Doesn't join in arm swaying with the rest of the audience…*
> *14:36 Doesn't join in shouting 'He's behind you'"* Extracts from field notes, 17th December 2003.

Oversensitivity

The field notes include several references to Ben's dislike of loud noises. During the main phase there was a special concert in which a high school band played in the school hall:

> *"10:53 Song is played (very loudly) … Ben seems a bit bemused by it all. 11:17 Puts fingers in ears briefly … Looking round the hall at other children who are clapping"* Extract from field notes, 4th October 2002.

Facial tics

These could be more severe some times than others and were observed in all settings, including when Ben was on or off task. Often he was observed to touch or rub his face, almost as if he was trying to disguise or lessen the effect of the tics in some way. They may have contributed to his problems with social relationships as children may have been disturbed by them. The literacy teacher in Y3 reported that she also noticed Ben clicking his fingers at times, possibly another form of motor tic?

8.5 Summary

Identification and assessment

There is evidence of a multi-professional approach to meeting Ben's educational and social needs over five years, with four professionals from three agencies involved in addition to school teaching staff (see Table **14b**) (BPS, 2000a; DfES, 2003; 2004a).

Variability in ADHD symptoms across contexts and over time

Ben displayed a higher proportion of ADHD behaviours:

- in the school hall;
- on ‘wet play’ days when there was no chance to run around at playtimes;
- in less structured lessons such as music;
- when there were changes to the routine or extraneous distractions.

In general, fewer ADHD behaviours were observed when he:

- worked on the computer;
- watched a video;
- was engaged in creative activities;
- worked in a small group on short, varied activities;
- received plenty of support; and
- had a good relationship with the teacher or TA.

There was variability in ADHD symptoms displayed by Ben over time. The most noticeable change was the rise in ‘inattention’ behaviours in Y4 which resulted in a decrease in ‘No ADHD’ behaviours (see FIS analysis in Figure **8.1**). He achieved lower ITS scores than the comparison pupil for ‘No ADHD’ behaviours in both Y3 and Y4.

Chapter 9

Case study 2: Carl

9.1 School setting

This community primary school is situated on the outskirts of a city. The area served by the school consists of mixed privately owned and local authority housing, but there is a high level of social and economic deprivation among families (OFSTED, 2003c). The percentage of pupils on roll eligible for free school meals was below the national average. During the academic years 2002/2003 and 2003/2004 there were approximately 440 pupils on roll. There are 14 mixed ability classes from Reception to Y6 in a two-form entry in the main school, and a nursery on the same site. Average scores in the school in 2003 national tests at the end of Y2 were below the national average in reading, writing and mathematics. Scores at the end of Y6 were also below the national average in mathematics, English and science. Attendance was below the national average. In 2003 there were 8 pupils with an ADHD diagnosis on roll, the highest number amongst the case study schools.

9.2 Classroom setting

In KS2, classes are taught in separate semi-open plan classrooms with the two classes in each year group situated in close proximity along an adjoining corridor. This enables the class teachers to change classes for some subjects. The majority of the lessons are taken by the class teacher, sometimes with the support of a TA. In Y5 and Y6 the year groups are split into ability sets for literacy and numeracy. There is a computer area for ICT work and space outside each main classroom for small groups to be withdrawn from class groups.

The case study was undertaken in a mixed-ability Y5 class of 27 pupils in the autumn term 2002/2003, and with the same cohort, which had reduced to 26, the following year. These figures are broadly in line with the national average KS2 class size (DfES, 2004b). During 2003/2004, two teachers took responsibility for the Y6 class on a job-share basis, one working two days per week and the other, three days. In both Y5 and Y6 Carl was included in small SEN groups for literacy and numeracy lessons, where he worked with a TA in a withdrawal area. In Y5 the numbers in the literacy group ranged from three to five pupils. For numeracy the group varied between four and seven pupils. In Y6 both literacy and numeracy groups consisted of the same four pupils.

9.3 Carl

Carl lived with his parents and a brother a year younger than himself. He enjoyed working on the computer and attended a weekly after-school computer club. One of the younger members of the class, Carl was aged 9 years 4 months at the beginning of the case study, and was one of two boys in the class with a diagnosis of ADHD. On the schools' ADHD survey questionnaire (see **Part 1** of the present research) the SENCO reported that Carl was *"not achieving educationally at his age level"* and he had other SEN including *"emotional and behaviour difficulties"* and *"specific learning difficulties"*. The use of medication had led to *"improved learning/behaviour"* and *"helped concentration"*. According to school individual tracking sheets, at the end of Y5 Carl was working towards level 3 for mathematics and level 2 for writing. He achieved level 2c for reading, with a reading age of 6y 11m.

Ian (non-ADHD comparison)

Ian was 9 years 11 months at the beginning of the case study. He lived with his mother and had regular contact with his father. School individual tracking sheets showed that at the end of Y5 Ian achieved level 4c for mathematics, level 4b for writing and 4a for reading, with a reading age of 11y 4m.

9.4 Findings

9.4.1 Identification and assessment process

Table **9a** summarises the identification and assessment processes for SEN and ADHD undertaken throughout Carl's primary school history. Efforts had been made towards early intervention for addressing his individual needs (DfES, 2003; 2004a).

Table 9a. Identification and assessment process - Carl (highlighting agencies involved)

Date	(Page 1 of 2)	
	Prior to case study period	
	SEN Code of Practice	ADHD diagnosis
Sep 1997	**Reception** **SENCO** *"alerted to general clumsiness and lack of organisation"*. Placed on **SEN register.**	
Sep 1998	**Year 1** Problems with learning, motor control, behaviour.	
Nov 1998	**SENCO** suggests referral to **General Practitioner (GP) -** dyspraxia suspected.	
Feb 1999		Referral to **community paediatrician** - referred him to **consultant** for possible ADHD diagnosis. Not diagnosed. Referral for **physiotherapy** assessment; **Occupational Therapy (OT)**; parents behaviour management course suggested, not taken up due to work commitments.
Jun 1999		Conners questionnaire completed by school for **Child and Family Services.**
Jul 1999		Review by consultant - await opinion of **Child Psychiatric Service**.
Sep 1999	**Year 2**	
Nov 1999	Referral to **Learning Behaviour and Support Service (LBSS)**; assessment followed by assessment teaching.	
Mar 2000		**SENCO** contacts **clinical psychologist** who assesses Carl.
Sum term		**Consultant child psychiatrist** diagnoses
Apr 2000	Parents request Statutory Assessment (SA).	ADHD and prescribes Ritalin.
May 2000	**Educational Psychology Service (EPS)** assess that he is correctly placed at **Stage 3**. LEA decision is not to proceed with SA.	
Sep 2000	**Year 3**	(Parents concerned over lack of continuity
Spr term	**LBSS** update requested. Difficulties in classroom due to Carl's behaviour and frustration. LEA agreement to fund extra help short term.	with **Child & Adolescent Mental Health Service (CAMHS)**, due in part to long-term sickness of c**onsultant child psychiatrist**)
Jun 2001		Following **SENCO** intervention, **consultant Community Paediatrician**: refers Carl to **Communication and Social Behaviour Assessment Team (CASBAT)** to clarify Asperger's or not; prescribes Melatonin; considers use of slow-release Ritalin.
Sep 2001	**Year 4**	
Oct 2001	**SEN School Action Plus** Extra support now to be delivered in **Specific Learning Difficulties Centre** (Provision for Stage 3 children with specific problems).	
Dec 2001	**Review**: *"Despite considerable input from variety of agencies, has not made any significant progress. Move for SA"*.	**CASBAT - Diagnostic report includes:** Correctly diagnosed with ADHD; does not fulfil criteria for Asperger's Syndrome; currently on Ritalin, 10mg, 8.00, 12.00, 3.30/4.00 plus 4mg Melatonin, 8pm. **Speech and Language Therapy (SALT) report:** *"recommend further investigation of expressive language, particularly narratives, time related vocabulary …"*.

Date	(Page 2 of 2) Case study period	
	SEN Code of Practice	**ADHD diagnosis**
Sep 2002	**Year 5** **Statement of SEN issued (monitoring only) -** no extra resources allocated. **Individual Education Plan (IEP): "***His difficulties are controlling behaviour, coping with handwriting, self-consciousness and dealing with frustration when his language skills cannot cope with the work"*	Now taking Concerta once a day at home - slow release Ritalin.
Oct 2002	**LBSS** report - advice for school IEP.	
Nov 2002	Annual review of statement, **SALT** report.	Slow release dose increased to 54mg.
Jan 2003	**LBSS** report	
Easter 03 holidays		***Mother decided to stop administering Concerta - did not inform school or doctor.***
Jun 2003	**Reports for phase transfer review:** **SALT** report**:** *"likely to struggle to access NC without extra classroom support"*. **Educational Psychologist (EP)** report - *"difficulty accessing the curriculum, regardless of ADHD which is now far more under control"*.	
Sep 2003	**Year 6** **Statement – Special Support Assistant (SSA) support** - 7.5 hours per week. **IEP:** *"needs individual support to explain and reinforce learning, especially in Maths"*.	
30 Sep 03	**SSA** begins, supports Carl two mornings and one afternoon per week.	
Oct 2003	**Parents evening report** *"Carl's mother seemed pleased with his progress and happy that he seems to be coping without medication"*.	
Following case study period		
Summer term 2004	Problems with disruptive behaviour at home and school – several threats of exclusion.	***(Still not taking medication - SENCO to suggest parents re-think situation)***.
Sep 2004	**Year 7** Begins high school (plans for him to receive support for literacy, numeracy lessons). **SENCO** reports informally, *"Not good news - apparently has been sent home on numerous occasions"*.	

9.4.2 Variability in ADHD symptoms

i) Variability across curricular contexts

Fixed Interval Sampling (FIS)

The extracts shown in Tables **9b** and **9c** have been taken from extended FIS analyses summaries (see Appendices **9.1** and **9.2**). Table **9b** highlights selected lessons where Carl achieved high percentages for 'No ADHD' behaviours and correspondingly low figures for ADHD behaviours.

Table 9b. Extracts from Fixed Interval Sampling Analysis (a)

Date, time, duration of recording period	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inatt	H/I
(i) **Wed 25 Sep 02** 11:00 – 60 mins	240	**Literacy –** Y5 group, n = 4, in withdrawal area – 6 varied activities, mainly oral	88%	7%	5%
(ii) **Wed 23 Oct 02** 14:35 – 20 mins	80	**Music** – half Y5 class, n = 14, in hall with music teacher. Play instruments, practice tune	81%	10%	9%
(iii) **Thu 4 Dec 03** 13:54 – 35 mins	140	**DT** – half Y6 class, n = 12, outside main classroom, with Y6 teacher. Modifying model of chassis, adding motor	88%	9%	3%
(iv) **Fri 14 Nov 03** 13:37 – 16 mins	64	**ICT** – working with a partner on a laptop - multimedia task	84%	11%	5%

(**i**) During a Y5 group literacy lesson on 25th September 2002, 88% 'No ADHD' behaviours were recorded for Carl. This was a well-planned lesson, taken by the SENCO who worked with the (inexperienced) 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. There were several occasions when Carl ***blurted out answers*** or ***interrupted others***, but it seemed that this was often in his eagerness to offer answers or suggestions. Occasionally he ***fidgeted***, had ***difficulty sustaining attention*** or ***difficulty in following through instructions*** but with a pupil:adult ratio of 4:2 he was soon guided back on task.

(**ii**) For the weekly music lesson the class was split into two, with Carl's half going in to the hall to work with a music teacher while the other half stayed in the classroom for other activities with the class teacher. After an introduction when he ***fidgeted***, Carl seemed to enjoy the lesson. He was especially pleased when he was chosen to play a

xylophone. Placed in between two girls, he concentrated and tried hard to play the right notes. There were several recordings when he had ***difficulty sustaining attention*** and ***awaiting his turn***, often when the teacher was talking to other children individually and he was keen to start playing again. He achieved 81% 'No ADHD' behaviours.

(**iii**) On 4th December 2003, there were 88% recordings for 'No ADHD' behaviours during a Design and Technology (DT) lesson taken by the teacher of the parallel Y6 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 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. The occasions when Carl found ***difficulty sustaining attention*** were usually when he was required to wait for the teacher's help. Carl had made a useful suggestion as to the best place to fix a motor to a model and the teacher asked Carl 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 ICT lesson on 14th November 2003 took place 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. The teacher frequently went over to check that they remained on-task and ensured that they took turns to type in phrases and to 'save' their work. The field notes include occasional references to Carl's ***fidgeting*** whilst at the same time on task. These periods were recorded as 'No ADHD' behaviours.

> *"13:46 Fidgets on his chair as he types…. Stands up, puts one leg on chair, then under him …"* Extract from field notes, 14th November 2003.

Table **9c** focuses on extracts where high percentages were recorded for ADHD behaviours. The field notes contain numerous references to Carl's repeated complaints

that he *'did not like maths'*, and that he was *'no good'* at maths, and many of the results show that he did not perform well in these lessons.

Table 9c. Extract from Fixed Interval Sampling Analysis (b)

Date, time, duration of recording period	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inatt	H/I
(v) **Fri 20 Sep 02** 13:58 – 25 mins	100	**Outdoor games** – Y5 class in playground. Practised bat and ball skills, individual and with partner	43%	35%	22%
(vi) **Mon 30 Sep 02** 09:17 – 50 mins	200	**Numeracy** – group, n = 4, withdrawal area with TA. Number bonds to 10; addition and subtraction games	35%	21%	44%
(vii) **Fri 15 Nov 02** 10:20 – 28 mins	112	**Whole-school assembly**, n = approx 420, in school hall, headteacher and teachers	28%	34%	38%

(**v**) Carl seemed unco-ordinated and had difficulty in doing the warm up exercises at the beginning of the Y5 class games lesson on 20th September 2002. He ***did not appear to listen*** to the teacher's instructions and sat furthest away from her, picking up small stones from the ground and throwing them at his neighbours. No one chose either Carl or the other boy with an ADHD diagnosis as a partner. The teacher reluctantly let them partner each other. They were ***easily distracted by extraneous stimuli***, as cars were visible on the nearby road. They did not do as requested, standing too far away from each other when throwing the ball, choosing to kick the ball instead of throwing it to each other and were the last to stop and sit down. Observations in this type of lesson are more difficult to record than in a classroom situation as some moving around is part of the lesson, but Carl only achieved 43% 'No ADHD' behaviours.

(**vi**) In the numeracy lesson on 30th September 2002 the highest overall recording of 44% 'hyperactive-impulsive' behaviours included numerous recordings of Carl's ***talking excessively***, ***blurting out answers*** and ***fidgeting***. The 'inattentive' behaviours contained many recordings of his having ***difficulty sustaining attention***, ***not appearing to listen*** and being ***easily distracted by extraneous stimuli***. There were only 35% 'No ADHD' behaviours recorded. This was the first lesson on a Monday morning. The field notes refer to informal conversational interviews, (a) with the TA, following the lesson:

> *"He is like this most Monday mornings … he usually gets calmer as the week goes on"* Extract from interview with TA, 30th September 2002.

(b) later in the day with the SENCO:

"He is often more 'hyper' on a Monday, after a weekend at home" Extract from interview with SENCO, 30th September 2002.

(**vii**) The 28% 'No ADHD' figure in the whole school assembly on 15th November 2002 was one of the lowest figures recorded for Carl. He often had difficulty coping in this type of situation, with so many distractions in the school hall filled with children. There were many occasions when he ***fidgeted*** and had ***difficulty sustaining attention***. The teacher tried to sit him next to a good role model, but this did not always help. The field notes show that this particular day was 'Children in Need' day and there was an air of excitement throughout the school. Various fundraising activities were being carried out, including the children wearing odd socks! The timing of the assembly had been rearranged by the Headteacher. Usually first thing in the morning following registration, it now followed the literacy lesson, just before playtime. Carl had difficulty coping with so many changes to routine (Cooper and Bilton, 2002).

Instantaneous Time Sampling (ITS)

The extracts shown in Table **9d** are taken from extended analysis summaries (see Appendices **9.3** and **9.4**).

Table 9d. Extracts from Instantaneous Time Sampling Analysis

Date, time at which 10-minute recording period began, (recordings made at 30-second intervals), part of lesson	**Lesson**	**Recordings out of 20**					
		Target pupil Carl			**Comparison Ian**		
		0	**Inatt**	**H/I**	**0**	**Inatt**	**H/I**
(viii) Tue 15 Oct 02	**Science** – Y5 class						
14:03 – Start	Devise tables – 'changes'	6	5	9	16	3	1
14:27 – Middle	Class discussion – share ideas	6	7	7	15	3	2
14:40 – End	Draw cross-section of fruit	5	9	6	14	4	2
(ix) Mon 25 Nov 02	**Art** – group, n = 5 in art area						
14:00 – Start	Apply hot wax to Batik	18	1	1	19	1	0
14:24 – Middle	Draw design on piece of material	17	3	0	16	4	0
14:44 – End	Reapply hot wax	18	2	0	19	1	0
(x) Mon 15 Sep 03	**History** – 2 xY6 classes						
13:36 – Start	Watch video – 'The Victorians'	16	1	3	20	0	0
13:57 – Middle	Class brainstorming session	3	8	9	11	6	3
14:28 **–** End	Writing, worksheets	5	12	3	13	7	0
(xi) Thu 20 Nov 03	**Science** – Y6 class, then groups						
11:30 **–** Start	Write up yesterday's experiment	5	12	3	13	6	1
11:50 **–** Middle	Writing, T introduces experiment	16	4	0	18	2	0
12:02 – End	Experiments – separating solids	20	0	0	20	0	0

(**viii**) Science was one of Carl's favourite subjects. He 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 the lesson on 15th October 2002, 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. His 'hyperactive-impulsive behaviours' score of 9 included ***fidgeting*** and ***unauthorised movement in the classroom***. 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 'inattention' 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 pay attention.

(**ix**) Carl enjoyed creative activities and was pleased to be one of the first chosen by the class teacher to work with a TA and a parent helper in the art area during the Y5 class art lesson on Batik on 25th November 2002. 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 also gave him the responsibility of going to another classroom to ask for some paint overalls 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.

(**x**) The first observation period on 15th September 2003 was carried out when the two Y6 classes joined up to watch a history video in the neighbouring Y6 classroom. It can be seen that having something interesting 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 classrooms. They show that neither Carl nor Ian concentrated as well as when they were watching the video, with Carl scoring 3 and 5 'No ADHD' behaviours, compared to Ian's 11 and 13. Both boys had recordings of ***difficulty***

sustaining attention and ***fidgeting***, but there were significantly more recorded for Carl than for Ian.

(**xi**) As mentioned above, science was one of Carl's favourite lessons. His behaviour during the lesson on 20th November 2003 provides a more realistic picture of his behaviour generally during science lessons. 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 had ***difficulty sustaining attention.*** With 12/20 recordings for 'inattentive' behaviours he needed a lot of support. He achieved 16 'No ADHD behaviours' compared to Ian's 18 in the middle recording period when the teacher was preparing the class for the experiments. 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 Carl was totally focused and matched Ian's score of 20.

(Insert Table 9e here)

(Insert Table 9f here)

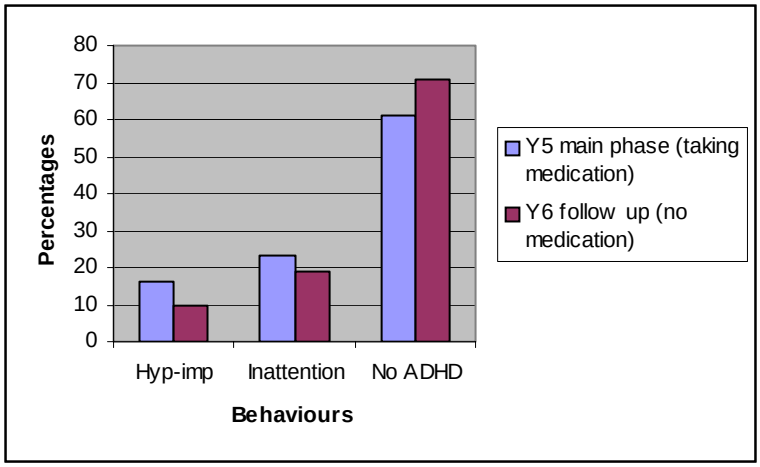
ii) Variability over time

Tables **9e** and **9f** provide details of observation recordings over both research phases. Several changes had taken place following Carl's transition from Y5 to Y6. He was no longer taking medication. It appeared from the figures in the present research that this made little difference to his learning and behaviour, and that in fact there were some improvements in his performance. However, as the school year progressed, information from the SENCO made it clear that Carl was having great difficulty in controlling his behaviour both at home and at school. An added factor in Y6 was that the class was regularly taught by two teachers with different teaching styles and attitudes. Carl may have had more difficulty than his classmates in coping with this change. It was also in Y6 that Carl's Statement of SEN was finally issued, providing him with regular individual SSA support for 7.5 hours a week.

Fixed Interval Sampling (FIS)

The information included in Figures **9.1**, **9.2** and **9.3** has been taken from the more detailed Table **9e**.

Figure 9.1. FIS recordings over time (all settings) - Carl



It can be seen from Figure **9.1** that over all of the FIS observation periods during the case study, the proportion of a lesson Carl spent displaying 'hyperactive-impulsive' (hyp-imp) behaviours fell from 16% in the main phase (Y5), to 10% in the follow-up phase (Y6). Figures for 'inattention' were higher in both years than those for 'hyperactive-impulsive' behaviours, decreasing from 23% to 19% in Y6. 'No ADHD' behaviours increased from 61% to 71%.

Figure 9.2. FIS recordings over time (literacy group) – Carl

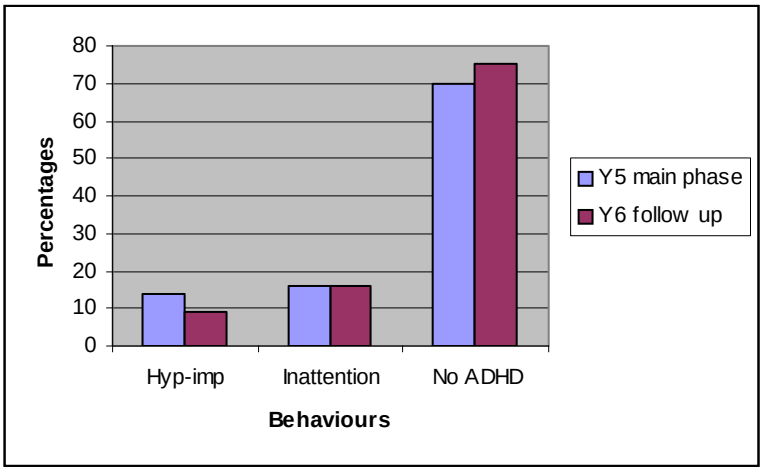
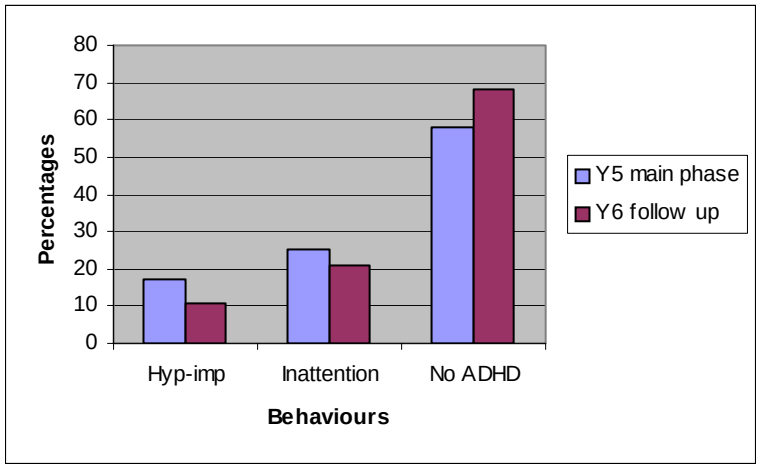


Figure **9.2** shows the variability in Carl's behaviour in literacy lessons between Y5 and Y6. 'Hyperactive-impulsive' behaviours decreased from 14% to 9% and 'inattentive' behaviours remained at 16%. There was an increase in 'No ADHD' figures from 70% in Y5 to 75% the following year.

Figure 9.3. FIS recordings over time (numeracy group) – Carl



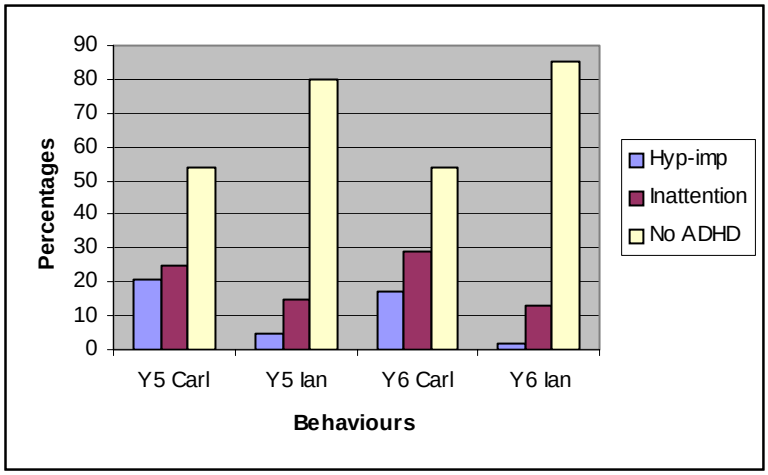
Even though Carl still claimed that he *'did not like maths'* (see earlier comments), Figure **9.3** illustrates the noticeable improvement in his numeracy performance in Y6. 'Hyperactive-impulsive' behaviours decreased from 17% to 11%, 'inattention' behaviours decreased from 25% to 21% and 'No ADHD' behaviours increased from 58% to 68%. The literacy and numeracy groups in Y6 were taken by an experienced TA who had developed a good relationship with Carl.

Instantaneous Time Sampling (ITS)

The changes are less numerically and visually marked here. It can be seen in Figure **9.4** (see also Table **9f**) that, as was the case in the FIS observation averages, Carl displayed

slightly more of the 'inattention' than 'hyperactive-impulsive' behaviours both years overall. His 'hyperactive-impulsive' behaviours decreased from 21% to 17% in the second year, with 'inattention' behaviours increasing from 25% to 29%. For both years his score for 'No ADHD behaviours' was 54% and Ian's increased from 80% to 85%.

Figure 9.4. ITS recordings over time – Carl and Ian (comparison)



9.4.3 Associated difficulties

Self-esteem

Carl did not appear to suffer from a poor self-esteem, with only slight variability over time. During the main phase his score of 15/24 on the self-esteem questionnaire was just below the class average of 16. The following year the class average remained the same but Carl's score increased to 17, the fifth highest score in the class. He was one of 11 pupils whose score increased in the follow up phase. The scores of 12 pupils decreased and two stayed the same.

Social relationships

Carl had problems initiating and maintaining friendships with boys of his own age, preferring sometimes to be with younger children. At playtimes he was often seen playing with a group of girls. The Y5 class teacher confirmed that two girls in particular often appeared to 'look after' him. The only boy to choose Carl on the sociometric question included in the self-esteem questionnaire was the other boy in the class with a diagnosis of ADHD. Carl himself chose girls on the questionnaire in Y5, changing to two boys in Y6. Whenever the opportunity arose, Carl appeared much happier talking to an adult.

Over-sensitivity

It was apparent on several occasions that Carl disliked loud noises. For example, the KS2 pupils were in the school hall on the afternoon of 25th November 2002. There was a considerable amount of activity and noise as the teachers attempted to place the children into their positions for a rehearsal for the forthcoming Christmas performance. Carl looked ill-at-ease, biting his nails, fidgeting slightly and not talking to anyone. On a trip to the theatre the researcher sat next to Carl and carried out participant observation. The following is an extract from field notes made later that day:

> *"Carl didn't join in audience participation. Not sure if he was happy with all the noise. He preferred chatting quietly to researcher about the play and the new Harry Potter film he had seen recently"* 10th December 2002.

There are several instances recorded when Carl did not seem to like tight clothes around him, or that he felt hot. He would sometimes untuck his shirt so that he could flap it and get some cool air on his skin. On the theatre trip mentioned above he insisted on removing his sweatshirt, claiming he was hot (it was actually a very cold day, and also cold inside the theatre at the time).

Concept of time, time management

Carl experienced problems telling the time, sequencing days of the week and months of the year and keeping track of the school timetable. These difficulties probably contributed to his obvious dislike of numeracy lessons. He did not know the date of his birthday.

> *"His understanding of concepts of time and quantity are very poor"*
> (Extract from report from Speech and Language Therapy (SALT) service, 13th November 2002).

Sleep problems

Carl often reported feeling tired, both when taking medication and after he had stopped taking it. He had been prescribed Melatonin by a consultant community paediatrician. The following extracts from the field notes provide examples:

> *"12:06 Carl: 'I'm tired' (puts head down on table).*
> *SENCO: 'A young boy like you shouldn't be tired'.*
> *Carl: 'I forgot to take my sleeping tablet'. "* (Extract from field notes made during literacy lesson, 25th November 2002).

"SSA reported to researcher that during one-to-one speech and language session this morning, Carl had again complained of being tired - says he's not sleeping" (Extract from 14th November 2003 informal interview).

9.5 Summary

Identification and assessment

There is evidence of a multi-disciplinary approach both in the SEN Code of Practice process (DfES, 2001a) and in the diagnosis and management of ADHD. In addition to class teachers, another 16 professionals from three agencies were involved in meeting Carl's needs over seven years (BPS, 2000a; DfES, 2003; 2004a) (see Table **14b**).

Variability in ADHD symptoms across contexts and over time

Carl displayed a higher proportion of ADHD behaviours:

- in the school hall and outdoor games lessons in the playground;
- on 'wet play' days when there was no chance to run around at playtimes;
- during numeracy lessons;
- when there were changes to the routine; and
- when he was tired due to sleep problems.

Fewer ADHD behaviours were observed when he:

- worked on the computer;
- watched a video;
- was engaged in creative activities;
- was in a small literacy group working on short, varied activities;
- received individual support; and
- had a good relationship with the teacher or TA.

There was a marked increase in 'No ADHD' behaviours recorded for Carl over all settings in the follow up phase (see FIS analysis Figure **9.1**). He achieved lower ITS scores than the comparison pupil for 'No ADHD' behaviours in both Y5 and Y6.

Chapter 10

Case study 3: David

10.1 School 3 setting

This community first school is situated on a local authority housing estate. In 2002/2003 there were 207 pupils on roll, from Reception class to Y4. There was a nursery where 50 children attended part-time. The LEA partly funded a Learning Support Base (LSB) to assist the school in meeting pupils' needs. The percentage of pupils on roll eligible for free school meals was well above the national average and the highest amongst the eight schools involved in **Part 2** of the research, as was the proportion of pupils included on the SEN Code of Practice stages. There were 3 pupils with an ADHD diagnosis in 2003. There is a high level of transience in the local community caused largely by housing issues. Levels of attendance are well below average (OFSTED, 2001a).

Classroom setting

The main phase of the case study was undertaken in a mixed-ability Y3/4 class of 25. This figure is broadly in line with the national average KS2 class size (DfES, 2004b). Originally planned for the spring term 2003, in practice the study was extended to include the first half of the summer term. This was due to insufficient data being gathered in the spring term owing to David's poor attendance record, which, according to school records, was 83.7% for the period 2/9/02 to 29/4/03. (The figure for John, the non-ADHD comparison pupil, was 96.7%).

In KS2 there were three Y3/4 classes. Occasionally the three classes join up, for example to watch a history video. Most curriculum areas were taught by the class teacher, sometimes with TA support. Within the class group, the pupils were split into ability groups for literacy and numeracy lessons. David was in the lowest ability groups, along with a girl who had a Statement of SEN and received SSA support for part of the week. When working in the groups, the SSA was often able to support others including David.

David attended the LSB twice a week for hourly literacy lessons where he worked in a group of 6 or 7 pupils with the SENCO and a TA. He also attended twice weekly nurture group (NG) sessions, which took place in the same classroom with the same

teaching staff. The emphasis in the nurture group was on improving social skills and building up pupils' self esteem and self-confidence (Cooper and Bilton, 2002).

10.2 School 7 setting

School 7 is a large oversubscribed community middle school (deemed primary), which serves a town and outlying villages. Pupils come from widely differing social and economic backgrounds, but eligibility for free school meals is broadly in line with the national average. In relation to their widely varying attainments on entry to the school, the pupils achieve satisfactory standards by the end of KS2 and in Y7 (OFSTED, 2000). In 2003/2004 there were 540 pupils on roll. This includes 18 mixed ability classes from Y5 to Y7 in a six-form entry. The proportion of pupils with SEN matched the national average. In 2003 there were 3 pupils with a diagnosis of ADHD.

Classroom setting

The follow up phase of the case study began in the spring term 2004 in a class of 30 pupils of mixed ability. This number is higher than the national average KS2 class size in primary schools (DfES, 2004b). David was one of three boys in the class with an ADHD diagnosis. As in the previous year, it was considered necessary to carry on into the summer term as by then David's attendance figures had deteriorated further to approximately 59% and the school had enlisted the involvement of the Educational Welfare Officer.

There were six Y5 classes, with some lessons taken by the registration class teacher and others by specialist teachers. Pupils moved between classrooms in a manner more often found in a secondary school. The pupils were in seven ability sets for literacy and six for numeracy. For literacy David was included in a small SEN group taken by the SENCO where he received plenty of support and encouragement. He was in the lowest ability numeracy set (6/6) which contained 28 pupils with a wide variety of needs.

10.3 David

David lived with his parents and older brother. He did not attend any after-school clubs. At the start of the case study David was aged 8 years 11 months. He was small for his age, had experienced hearing problems and wore spectacles, although these were often

reportedly broken by his brother and there were long periods when David was without them. On the schools ADHD survey questionnaire (see **Part 1** of the present research) the SENCO reported that David was *"not achieving educationally at his age level"* and had other SEN including *"general learning difficulties"*. The use of medication had led to *"increased concentration"* and *"improved listening skills"*. According to school records, his literacy and language problems were hindering his progress in other curriculum areas, notably mathematics as can be seen in the test scores in Table **10a** below:

Table 10a. David - Standard Assessment Task (SAT) and non-statutory tests scores

	SATs	Non-statutory tests	
	Y2	Y3	Y4
Writing:	1	1b	1a
Reading:	W	1c	1b
Maths:	2b	3c	2a*

*(problems due to language, reading ability)

John (non-ADHD comparison, school 3)

John was aged 8 years 5 months at the start of the case study. He lived with his parents and two younger sisters. Table **10b** shows his test scores:

Table 10b. John - Standard Assessment Task (SAT) and non-statutory tests scores

	SATs	Non-statutory tests	
	Y2	Y3	Y4
Writing:	2a	3c	3c
Reading:	2a	2a	3a
Maths:	2c	2a	3c

Mark (non-ADHD comparison, school 7)

Mark lived with his parents and an older sister. He was in set 5/7 for literacy and set 3/6 for numeracy.

10.4 Findings

10.4.1 Identification and assessment process

Table **10c** provides a summary of the identification and assessment processes undertaken throughout David's pre-school and school history.

Table 10c. Identification and assessment process – David (highlighting agencies involved)

Date	(Page 1 of 2) Prior to case study period SEN Code of Practice	ADHD diagnosis
Nov 1997	***School 3*** **Nursery** **SEN Stage 1 areas of concern record sheet:** • Problems with hearing, speech, fine motor skills • Doesn't interact with other children • Behaviour problems at home • Finds sharing/ taking turns difficult.	Involvement of **Consultant paediatrician** – general development and behaviour. Also **consultant clinical psychologist**
Feb 1998	**SEN Stage 2/3 Individual Education Plan (IEP) targets include:** • Classroom interaction - play with 2/3 other children for a short time • Improve listening skills Grommets fitted – not much improvement – home/nursery.	
Jun 1998	**IEP review** More interaction with peers, plays co-operatively, still needs encouragement to share. Expressive & receptive language delayed. Mother concerned about behaviour and development.	**ADHD diagnosed. Ritalin** prescribed by **consultant paediatrician.**
Mar 1999	**Reception** **IEP review** • New grommets – improved speech • Suggest small group work • No behavioural concerns.	Still taking Ritalin
Apr 1999 **Oct 1999**	**Year 1** **IEP review:** • Concerns – speech, fine motor skills • Refer to **Speech and Language Therapy (SALT) Service** • **School nurse** to investigate Ritalin (if no further action – stage 2).	Completed Conners questionnaire sent to **Child psychiatrist** **School nurse** to investigate Ritalin
Mar 2000	**SEN stage 2 IEP review:** • Fine motor still a concern • Behaviour an issue (loud) • Suggest using kinaesthetic strategies where possible to maintain focus and interest.	**School doctor** doubted David still taking Ritalin
Jul 2000	**IEP review:** • Targets include not to hurt, no shouting • Attendance an issue. Parents did not attend parents evening • 2 x weekly social skills sessions (**Nurture group**).	No Ritalin – behaviour a serious concern
Dec 2000	**Year 2** **IEP review:** • Still tending to shout out • Has been involved in hurting others • Suggest allow time to process, use multi-sensory approach • 2 x 1hour LSB weekly.	
Feb 2001	**Request for Learning Behaviour and Support Service (LBSS) involvement at SEN Stage 3. EP report** SSA for a statemented pupil has supported him in class Has been involved in disputes with other children.	
May 2001	**IEP review:** Constant interruptions Target to listen without interruption or disturbance.	

Date	(Page 2 of 2)	
	SEN Code of Practice	**ADHD diagnosis**
May 2001	**LBSS Assessment – summary preliminary considerations** Cause for concern owing to difficulties acquiring basic literacy skills and also some behavioural problems. Other agencies involved include **SALT** **Outcome: assessment teaching in reading and handwriting.**	Parents explained – no longer taking Ritalin as it had an adverse effect on him.
Sep 2001	**Year 3** **LBSS – Assessment teaching summary** *"has great difficulty in sitting still; constantly moving, tapping or fiddling. Attention span very limited .. easily distracted by movement & sound .. very demanding of teacher's time. Auditory & visual memory appear to be under-developed .. ability to carry out instructions poor".* **Targets** set for reading & handwriting.	
Nov 2001	**IEP review:** **Concerns** re anxiety, e.g. licking fingers; heightened sensitivity; difficulty listening; regular absence. **Targets:** increase attention/recall. Repeat instructions; quiet,hand up Suggest selective medical; use games loaned by **LBSS.**	
Jan 2002	On rating scale of ADHD Criteria – 8/14 'very much', 6/14 'pretty much'	DuPaul ADHD rating scale completed and returned to **Child Psychiatry Service**
Jun 2002	**School Action Plus IEP review:** Arrives late – parents inform HT of serious behavioural problems at home – doesn't want to come to school. Well-motivated in LSB. **Targets:** decrease frequency of finger licking – use blu-tac to occupy fingers.	
	Case study period	
Nov 2002	**Year 4** **IEP review:** Attendance still a concern **Targets:** limit interruptions. Hand up to speak. Parental involvement: Dad concerned when David not eating lunch. SENCO suggests he brings sandwiches – food of his own choice.	Some difficulty with medication this term. SENCO mentions changing time of eating lunch or taking tablet?
May 2003	**IEP review:** Parents did not attend. **SENCO** and **Educational Psychologist** (**EP**): Make decision to refer to **school nurse.** Worries about poor attendance.	Taking Concerta – slow-release medication
Sep 2003	***School 7*** **Year 5** Difficulties encountered by researcher regarding access to documentation	
Jan 2004	(David receives some classroom support from teaching assistant (**TA** who supports boy with statement of SEN). Absent on day **EP** in school to observe him.	Still on Concerta – dose has been checked - worries re not eating
Feb 2004	Parents report D not sleeping; behaviour *'off the wall'* at home (T states his behaviour is not a problem at school).	Dad concerned dose medication missed – T reported no change in behaviour
Mar 2004		
Sum term 2004	School involve **Educational Welfare Officer –** poor attendance.	
	Following case study period	
Sep 2004	**Year 6** David's parents transfer him to another middle school.	

10.4.2 Variability in ADHD symptoms

Due to David's poor attendance record fewer hours were spent in observing him than target pupils in other case studies.

i) Variability across curricular contexts

Fixed Interval Sampling (FIS)

Figure **10.1** demonstrates the noticeable variability between David's behaviour in the nurture group and Learning Support Base in Y4 and in the main class group. In the nurture group, David displayed 8% 'hyperactive-impulsive' and 5% 'inattention' behaviours, compared with 9% 'hyperactive-impulsive' and 14% 'inattention' behaviours in the main class group. This led to a high 87% 'No ADHD' behaviours being recorded in the nurture group and LSB, compared to 77% in the main class group.

Figure 10.1. FIS recordings in nurture group/LSB and main Y4 class setting – David

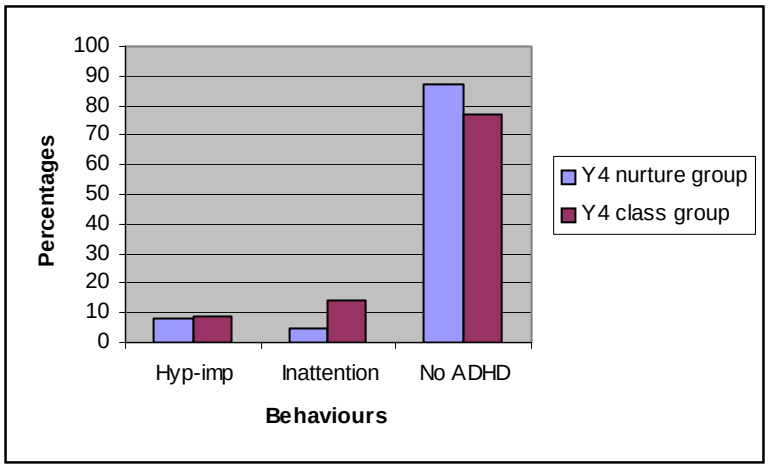


Table 10d. Extracts from Fixed Interval Sampling Analysis (a)

Date, time, duration of recording period	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inatt	H/I
(i) School 3 Fri 7 Mar 03 09:48 – 50 mins	200	**Numeracy/ICT** – Y3/4 class in ICT suite. Work in pairs on multiplication programmes, mouse skills	94%	1%	5%
(ii) Thu 1 May 03 14:14 – 25 mins	100	**Nurture group** (n = 8) – in LSB room with TA. Social skills games.	93%	1%	6%
(iii) School 7 Tue 13 Jan 04 08:38 – 52 mins	208	**Art** – Y5 class in Art/DT room with art teacher. 'Shape explosion' – design, cut out gummed paper, stick on	86%	14%	0
(iv) Tue 23 Mar 04 10:46 – 49 mins	196	**Literacy** (n = 10) – Y5 set 7/7, with SENCO. Word-building, oral & written; dictation, sentences, spelling	83%	15%	2%

The extracts shown in Tables **10d** and **10e** have been taken from extended FIS analysis summaries (see Appendices **10.1** and **10.2**). Table **10d** highlights selected lessons where David achieved high percentages for 'No ADHD' behaviours and correspondingly low figures for ADHD behaviours.

(**i**) David enjoyed working on the computer and usually performed well, displaying good mouse control. In the numeracy lesson on 7th March 2003 in the ICT suite in school 3 he achieved 94% 'No ADHD' behaviours. Following the teacher's introduction, the class worked in pairs. No one chose David at first, and an SSA helped him to find a suitable partner. They worked co-operatively together and David appeared to know most of the 2 and 5 times tables. Occasionally David had ***difficulty awaiting his turn*** and made a grab for the mouse in his enthusiasm. These occasions were included in the 5% 'hyperactive-impulsive' behaviours. There was some reading involved and David's partner offered peer support by reading instructions out loud.

(**ii**) As previously mentioned, David achieved high figures for 'No ADHD' behaviours in the nurture group. On 1st May 2003 he paid attention throughout most of the session on social skills games, achieving 93% 'No ADHD' behaviours, with only 6% ***fidgeting***. It was interesting to note at one point that, unlike other pupils in the group, he was not ***easily distracted by extraneous stimuli***:

> *"14:30 Some children go and look out of the window at men on lawnmowers in school grounds. David was one of those who stayed in his seat"* Extract from field notes, 1st May 2003.

(**iii**) Creative activities appealed to David and on 13th January 2004 in school 7 he achieved 86% 'No ADHD' behaviours in a Y5 art lesson which focused on 'shape'. The 14% 'inattentive' behaviours included recordings of his ***difficulty sustaining attention*** and being ***easily distracted by extraneous stimuli.*** Following the teacher's introduction, the class sat in groups of four on stools around art tables. David sought reassurance from the teacher that he was doing the right thing. When she saw that David was running out of time towards the end of the lesson she offered him some individual support, helping him to finish fitting his shapes together and sticking them on to the page.

(**iv**) In the Y5 literacy group in school 7 there was a good staff:pupil ratio, with 10 – 12 pupils and three adults (the SENCO, TA and SSA who provided individual support for a boy with a Statement of SEN). When engaged in individual written work, the pupils would sit at separate tables with carrels around them in order to reduce both visual and auditory distractions (Cooper and O'Regan, 2001). On the morning of 23rd March 2004 David achieved 83% 'No ADHD' behaviours. The majority of the 15% 'inattentive' behaviours were occasional recordings for ***difficulty sustaining attention***, and one or two instances of ***fidgeting*** accounted for the 2% 'hyperactive-impulsive behaviours.

Table **10e** below focuses on settings where high percentages were recorded for ADHD behaviours.

Table 10e. Extract from Fixed Interval Sampling Analysis (b)

Date, time, duration of recording period	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inatt	H/I
(v) School 3 Fri 17 Jan 03 11:15 – 60 mins	240	**Literacy** – Y3/4 class group. Supply teacher. Alliterative poems, oral then copy from board, suggest own ideas.	65%	28%	7%
(vi) Mon 24 Mar 03 13:37 – 35 mins	140	**History** – 2 x Y3/4 classes. T shows 'wax tablets', then all watch video of 'The Invaders'	66%	23%	11%
(vii) School 7 Mon 2 Feb 04 09:36 – 49 mins	196	**Numeracy** – Y5 set 6/6, n = 28. Tables test, 'money' – oral Q&A session; play coin card game in pairs	41%	35%	23%

(**v**) On 17th January 2003 a supply teacher took David's Y3/4 class in school 3. David's lowest recording (65%) for 'No ADHD' behaviours and the highest (28%) for 'inattention' in the main phase were made during the literacy lesson on that day. The lesson began with the class sitting on the carpet for the teacher's introduction. The children were asked for suggestions for alliterative poems and the teacher wrote some of these on the board. The less able groups were to copy these and the rest could make up some of their own. Unfortunately during the writing activity a girl in David's group was particularly upset about something and David was ***easily distracted by extraneous stimuli*** and had ***difficulty sustaining attention.*** Later David sought reassurance and praise from the SSA, often leaving his seat and following her around (***unauthorised movement in the classroom***). In other lessons he had been observed seeking support from the teacher as well as the SSA, but on this occasion he constantly went to the SSA with whom he was familiar rather than the less familiar supply teacher.

(**vi**) For much of the day on 24th March 2003 it was apparent that many children in David's Y3/4 class were particularly unsettled and fidgety (the teacher suggested this was possibly due to the 'Monday effect' – difficulty in settling down to school again following the weekend). David was not wearing his glasses (they were apparently broken again) and he began the history lesson by sitting a long way from the teacher and the television. He had ***difficulty sustaining attention*** and ***fidgetted*** throughout the first part of the lesson when the teacher discussed a recent museum trip which had focussed on 'The Romans' (David had missed the trip). Even when the video was playing David continued to ***fidget*** and had difficulty concentrating, possibly because there was not a lot of room for pupils from two classes to sit on the floor. Towards the end of the lesson he used a piece of 'Blu-tac', with the teacher's permission, to occupy his hands, but seemed to focus on this more than the lesson. Overall, he achieved 66% 'No ADHD' behaviours, with 23% 'inattention' and 11% 'hyperactive-impulsive' behaviours.

(**vii**) In the Y5 numeracy lesson in school 7 on Monday 2nd February 2004 David achieved 41% 'No ADHD' behaviours, the lowest recorded over all curricular areas over two years. There were 23% 'hyperactive-impulsive' behaviours (the highest overall), and 35% 'inattention'. There were several factors that may have contributed to these observation results. In this lowest ability set there were 28 pupils with a wide range of learning difficulties and behavioural problems. The teacher later explained that many of the pupils suffered from a lack of self-confidence, especially on a Monday when presented with a new topic. There were many occasions when David had ***difficulty sustaining attention*** or was ***easily distracted by extraneous stimuli***. When he did any work, he was constantly seeking reassurance from the SSA who supported a boy who had a Statement of SEN.

> *"09:53 T asked questions of the group. David checks with SSA his answers are correct before putting up his hand.*
> *10:02 T explains how to play the 'coin card game'. David checks with SSA what to do"* Extract from field notes, 2nd February 2004.

David spent much of the lesson ***fidgeting***, fiddling with his pencil case, ruler and book. When the SSA removed these he fiddled with his clothes, fingers and hands, jiggled his feet and legs, slouched down in the chair or swung back on two chair legs.

Instantaneous Time Sampling (ITS)

The extracts shown in Table **10f** are taken from extended analysis summaries (see Appendices **10.3** and **10.4**).

Table 10f. Extracts from Instantaneous Time Sampling Analysis

Date, time at which 10-minute recording period began, (recordings made at 30-second intervals), part of lesson	Lesson	Recordings out of 20					
		Target pupil David			Comparison John/Mark		
		0	Inatt	H/I	0	Inatt	H/I
(viii) School 3							
Wed 5 Feb 03	**Art/ICT** – Y3/4 'Colour Magic'						
14:11 – Start	On carpet, T demonstrates	18	1	1	19	1	0
14:30 – Middle	Working in pairs on computers	17	2	1	18	2	0
14:46 – End	On computers, then end on carpet	12	1	7	16	3	1
(ix) Tues 11 Feb 03	**Literacy** – 'Traditional Stories'						
11:19 – Start	On carpet, recap adjectives	5	5	10	18	2	0
11:46 – Middle	At tables, writing in books	14	3	3	18	2	0
12:00 – End	At tables, then on carpet	9	7	4	16	4	0
(x) Mon 12 May 03	**DT** – design, picnic container						
13:39 – Start	On carpet for T's introduction	15	4	1	15	5	0
13:53 – Middle}	{Working at tables on making	16	3	1	17	3	0
14:05 – Middle}	{prototype model	20	0	0	19	1	0
14:28 – End	Sit in circle on carpet, show work	10	4	6	10	6	4
(xi) School 7							
Thu 6 May 04	**RE** – Y5 class 'Community'						
13:40 – Start	ST introduction. Class - oral ideas	6	11	3	16	4	0
14:07 – Middle	Oral, then copy from board	16	4	0	16	4	0
14:20 – End	Devise, write mosque timetable	8	12	0	14	6	0

(**viii**) On 5th February 2003 in school 3 the Y3/4 Art lesson took place in the ICT suite and focussed on the use of a programme called 'Colour Magic'. At the beginning when the class sat on the carpet for the teacher's introduction, David achieved 18/20 'No ADHD' behaviours, comparing favourably with John's 19. Coincidentally, David chose John to be his partner and they worked co-operatively together on a computer, with John offering peer support which included 'saving' their work at the end. David achieved 17/20 when working on the computer task, compared to John's 18. During the final observation period, David occasionally sought reassurance and praise from the SSA or teacher, sometimes following them around the room (***unauthorised movement in the classroom***). When sitting on the carpet for the final session, he was squirming and ***fidgeting*** on the carpet and at one point he ***blurted out an answer***. This led to his 7/20 'hyperactive-impulsive' behaviours and 12 'No ADHD' behaviours. John achieved 16/20 'No ADHD' behaviours.

(**ix**) In the literacy lesson on 11th February 2003 the class began by sitting on the carpet for a recap of work done previously before the teacher outlined the next written activity. David's score of 10/20 for 'hyperactive-impulsive' behaviours was his highest overall and included recordings for ***fidgetting***, often taking off his glasses and swinging them around, and ***blurting out an answer.*** He only achieved 5/20 'No ADHD' behaviours, compared to John's 18. During the middle recording period the class were sitting in groups at tables writing in their exercise books. David concentrated for much of the time, achieving 14/20 'No ADHD' behaviours. The 3 recordings for 'inattention' were when he briefly had ***difficulty sustaining attention***, and the 3 for 'hyperactive-impulsive' behaviours included ***unauthorised movement in the classroom*** when he went over to the teacher for reassurance. John scored 18/20 'No ADHD' behaviours. On the carpet for the final recording period, David became more ***fidgetty,*** and ***blurted out answers***. He achieved 9/20 'No ADHD' behaviours, compared to John's 16.

(**x**) Throughout most of the DT lesson on 12th May 2003 when four observation periods were undertaken, David had the support of the SSA. She offered plenty of encouragement and praise as he designed and made a paper prototype picnic basket. David paid attention from the start, matching John's 15/20 'No ADHD' behaviours. Whilst working on his model his scores were 16 and 20, compared to John's 17 and 19. Included in the 'inattention' recordings for David were two for ***difficulty in organising tasks and activities.***

> *"13:47 David: ' I don't know what to do'. SSA encourages him: 'You can have more paper if you make a mistake…'*
> *13:52 David: 'Miss, it's gonna look wrong!'*
> *13:55 SSA gives D some help: 'I'll do this side, then you can do the other side the same as I did'*
> *14:05 SSA: 'Now do a lid … have you measured it?'* Extract from field notes, 12 May 2003.

Both David and John scored 10/20 'No ADHD' behaviours for the final recording period when the class sat in a circle on the carpet to show their models. David displayed slightly more 'hyperactive-impulsive' behaviours than John. They both had ***difficulty sustaining attention*** and were ***easily distracted by extraneous stimuli***.

(**xi**) The RE lesson on 6th May 2004 in school 7 was taken by a supply teacher who was unfamiliar with the class. The first observation period was during the introduction and oral session on 'Community', when the teacher was asking the class for suggestions

which she then wrote on the chalkboard. David had ***difficulty sustaining attention*** and was ***easily distracted by extraneous stimuli.*** He spent much of the time drawing on his pencil case and sorting through the contents. He only achieved 6/20 'No ADHD' behaviours, with 11 'inattention'. Mark scored 16 'No ADHD' behaviours. During the second period David focused on copying from the board, matching Mark's 16 'No ADHD' and 4 'inattention'. The recordings for 'inattention' were mainly due to his being ***easily distracted by extraneous stimuli***, when he tried to look through the window blinds at children who were particularly noisy outside. The final period involved individual work – designing and writing out a mosque timetable. David appeared to find this activity difficult, partly because he had had ***difficulty sustaining attention*** during the explanation. He was often ***easily distracted by extraneous stimuli***, and at one stage was seen to be trying to copy his neighbour's work.

(Insert Table 10g here)

(Insert Table 10h here)

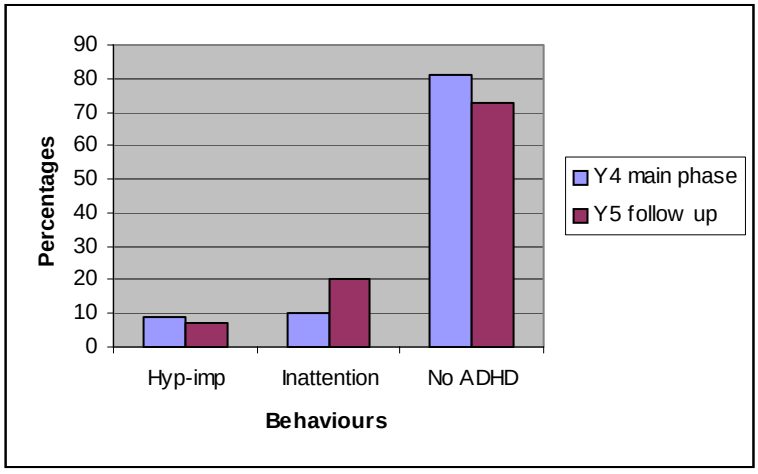
ii) Variability over time

Tables **10g** and **10h** provide details of observation recordings over both research phases. David's transition from Y4 to Y5 involved a change from a first school to a large middle school, where the delivery of the curriculum placed more emphasis on self-organisation and independence (British Psychological Society, 2000a). The decline in his attendance figures could also be an important factor as he had often missed work from previous lessons and had gaps in his knowledge

Fixed Interval Sampling (FIS)

The figures shown in Figure **10.2** are taken from Table **10g**. Over all of the FIS observations made during the case study, the proportion of a lesson David spent displaying 'hyperactive-impulsive' (hyp-imp) behaviours decreased slightly from 9% in Y4 to 7% in Y5. 'Inattention' behaviours rose from 10% to 20% and 'No ADHD' behaviours were 81% during the main research phase, falling to 73% in the follow up phase.

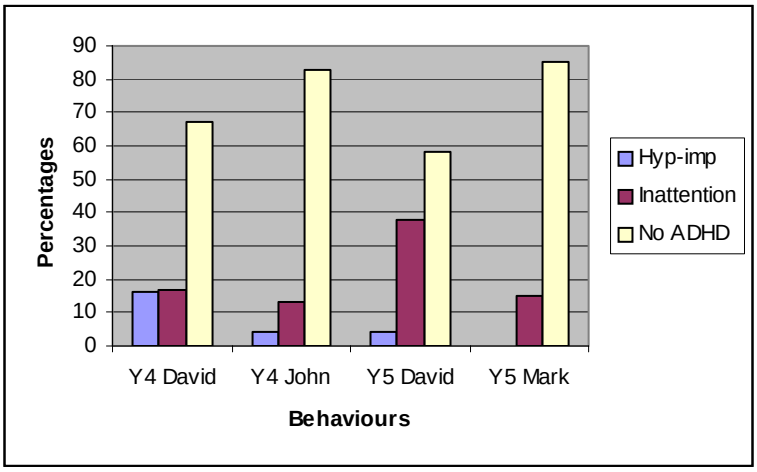
Figure 10.2. FIS recordings over time (all settings) – David



Instantaneous Time Sampling (ITS)

Even though a different non-ADHD pupil was used as a comparison in the follow up phase in Y5, a similar pattern to the one in the FIS findings above can be discerned in the overall ITS recordings shown in Figure **10.3** (taken from Table **10h**). The number of 'hyperactive-impulsive' behaviours recorded for David showed a decrease from 16% to 4%. 'Inattention' behaviours increased from 17% to 38% and 'No ADHD' behaviours decreased from 67% to 58%. The comparison pupil achieved 83% 'No ADHD' behaviours in the main phase and 85% the following year.

Figure 10.3. ITS averages over time (all settings) – David and comparisons



10.4.3 Associated difficulties

Self-esteem

As previously mentioned, David had moved from first school to middle school when the follow up phase of the study was undertaken. This meant that self-esteem questionnaires were administered to different cohorts in the main and follow up phases. David's score on the questionnaire remained the same at 13/24 for both years. This was below the class average on both occasions (14 during the main phase and 17 the following year). Although it is difficult to draw any conclusions regarding David's level of self-esteem, it appears to have remained stable over the school transition and over time.

Social relationships

David had problems initiating and maintaining friendships and no-one chose him as a playmate in the sociometric question included on the self-esteem questionnaire. Although informal playground observations in school 3 found that he usually joined in a football game, there was hardly any interaction between David and his peers. He was always happy to speak to adults, including the researcher, whether it was to ask for help or for a more general conversation. On one occasion when pupils from KS1 and KS2 came together to play simple board games, he was observed to be working well with the younger children.

Concept of time

David did not know the date of his birthday and was often unsure of the weekly timetable. In Y4 he attended the nurture group on Tuesday and Thursday afternoons, but

often on other days he thought it was one of his days in the group. At one stage when he was not happy about doing PE lessons in Y4,

> *"09:03 David puts his head on his arms on the table, saying 'I don't want to do PE today' (the researcher told him that they have PE on a Wednesday and today is Tuesday)"* Extract from field notes, 11th February 2003.

Over anxiety, need for constant reassurance

There were many references in the field notes to anxiety symptoms displayed by David. During the case study in both Y4 and Y5 he was often seen with his fingers or the sleeve of his sweatshirt in his mouth. In an interview on 13th January 2004, David's Y5 teacher described him as a *"frightened, anxious little boy"*. Throughout the case study there were observations of David's constant need for reassurance. He often got up from his seat to take his work over to show the teacher or TA. At the beginning of a numeracy lesson in school 3 when the teacher was writing problem-solving questions on the board, he kept calling out:

> *"I can't read it … I can't do them … I can't read them … I'm not good at reading … Miss, I have problems with reading"* Extract from field notes, 11th February 2003.

10.5 Summary

Identification and assessment

Interventions to address David's needs involved a multi-disciplinary approach (DfES, 2001a) in both schools 3 and 7. In addition to class teachers, another 12 professionals from three agencies were involved in supporting him over seven years (DfES, 2003; 2004a) (see Table **14b**). Efforts on the part of school 7 to obtain more support in school were thwarted partly by his poor attendance (see entry for January 2004 on Table **10c**).

Variability in ADHD symptoms across contexts and over time

David was observed to display fewer ADHD behaviours:

- in the nurture group and LSB in school 3 and in the SEN literacy group in school 7, where there were good adult: pupil ratios and plenty of support;
- in the main class group on occasions when he received individual support from T, SSA or TA, or peer support, particularly in desk-based tasks;
- when working on the computer; and
- when engaged in creative activities.

A higher proportion of ADHD behaviours was observed:

- in the Y5 numeracy set where there appeared to be too many pupils and not enough support;
- when there were changes to routine, for example a supply teacher taking the class, or when there were too many distractions; and
- during carpet sessions at the beginning or end of some lessons.

There was evidence of variability in ADHD symptoms displayed by David over time. He achieved lower scores than the comparison pupils for ‘No ADHD’ behaviours in both Y4 and Y5.

Chapter 11

Case study 4 - Edward

11.1 School setting

This small Church of England first school had 130 pupils on roll during the two academic years 2002/2003 and 2003/2004. There were five mixed ability classes from Reception to Y4 in a one-form entry. The percentage of pupils on roll eligible for free school meals was below the national average. The pupils' attainment on entry covers a wide range of abilities and varies from year to year. In Y2 National Curriculum tests in 2001, the school's results were broadly in line with the national average (OFSTED, 2001c). There were known to be two pupils with an ADHD diagnosis on roll in 2003.

11.2 Classroom setting

The case study was undertaken in a mixed-ability Y2 class of 30 in the spring term 2003 and again with the same cohort the following year, although one pupil had left and two new pupils had joined the class. These figures are above the national average for KS1 and KS2 class sizes (DfES, 2004b). In both Y2 and Y3 almost all lessons were taken by the class teacher. On Friday mornings in Y2 a regular supply teacher took the class to allow the class teacher/SENCO some non-contact time. In Y3, Edward's class teacher took the Y4 class for art lessons and the Y4 teacher took Y3 for PE.

In Y2 Edward was included in a group of 10 pupils who were taught literacy once a week by an experienced SEN teacher. For all other literacy and numeracy lessons a TA worked alongside the class teacher in the main class group. At times when the class split into four ability groups within the classroom, the TA supported the groups which included Edward. During the following year the Y3 teacher only received regular TA support for numeracy lessons. Edward was included in a group of four who were withdrawn by another TA to work on Accelerated Literacy Skills (ALS) for half an hour each Monday afternoon.

11.3 Edward

At the beginning of the case study in January 2003, Edward was just seven years old. He lived with his mother, stepfather and younger sister and had regular contact with his biological father. He often stayed at weekends with his *"real Dad"* (Edward's words),

his father's new partner and her 15-year old son. By the follow up year Edward's mother had given birth to another son. The baby had been born prematurely and with health problems, necessitating frequent hospital visits. During the spring term in Y3 Edward's behaviour in school deteriorated noticeably (see later analysis of systematic observation figures). The class teacher, SENCO and researcher agreed that the situation at home may have contributed to this. With much of his mother's time taken up with caring for a toddler and a baby who underwent an operation and other hospital treatment, Edward may not have been receiving as much attention at home as he would have liked. Following a review by his paediatrician, his medication dosage was increased.

On the schools ADHD survey questionnaire (see **Part 1** of the present research) the SENCO reported that Edward was *"not achieving educationally at his age level"* and had other SEN including *"learning difficulties (general)"* and *"emotional and behaviour difficulties"*. The use of medication had led to *"improved learning/behaviour"*, making him *"less disruptive in class"*. At the end of Y2 he achieved level 1 in English, maths and science in Standard Assessment Tasks (SATs). Edward did not attend any after-school clubs.

Keith (comparison pupil)

Keith was aged 6 years 7 months at the beginning of the case study. He lived with his parents and an older brother. He was placed in the top ability groups in the class for literacy and numeracy. In SATs at the end of Y2 he attained level 2 in maths and level 3 in English and science.

11.4 Findings

11.4.1 Identification and assessment process

Table **11a** provides a summary of the identification and assessment processes for SEN and ADHD undertaken throughout Edward's time in first school.

Table 11a. Identification and assessment process – Edward (highlighting agencies involved)

Date	(Page 1 of 2) Prior to case study period SEN Code of Practice	ADHD diagnosis
Sep 2000	**Reception** **Stage 1 SEN** register - **SENCO** informed of concerns, including attention seeking, attempting to run away from school.	
Nov 2000 **Dec 2000**	Meetings between class teacher and Edward's mother to discuss concerns. Early medical requested. School hearing test – passed.	
Jan 2001	Meeting between SENCO, class teacher and Edward's father. **Action suggested:** to be put on to **Stage 2 SEN** register, offer support from **teaching assistant** (**TA**) within a small group.	Father states that Edward was diagnosed 'early on' with ADHD, though no drug treatment was given.
Mar 2001	**Individual Education Plan (IEP) (Behaviour) review** • Less self harm • Listening improved only with adult support • Still trying to run out of school. **Targets:** • Build on improved listening skills • Stop running out of classroom and away from staff and to control temper.	
Summer holiday		Prescribed Ritalin (half a tablet 3 times a day, first at home, second and third at school).
Oct 2001	**Year 1** **IEP (Behaviour) review:** • Listening still a problem • Not running off; trying hard to control temper; calmer. **Targets:** • Stay focused for longer on task, build up from 10 – 20 minutes • Encourage independent working without support.	
Nov 2001	**Report** from **SENCO** to **paediatrician** includes: • Behaviour calmer and less disruptive • Displays fewer darker moods • Craves adult attention. Good relationships with most peers and adults • Struggling to access curriculum, possibly moving to **Stage 3** • Since medication – marked improvement in behaviour • Still some emotional problems.	Report sent to paediatrician as requested – review medication
Feb 2002	**IEP review:** • Stays on task for longer, working more independently • Behaviour much improved (medication helping). **Targets** now focused on learning.	
Jun 2002	**School Action Plus** **Learning Behaviour and Support Service** (**LBSS**) Assessment report Suggestion of **Speech and Language Therapy** (**SALT**) service input - Mum feels there is no need. Ritalin – takes last dose at midday. *"Mum does not feel his behaviour has changed at home, but it has at school"*. Teacher's comments include: *" He does not have the social skills necessary to try to form friendships… If a task is too difficult he will opt out and act immaturely, crying to go home. He particularly dislikes number work…"* Assessment focuses on learning and includes *"retention of concepts is very poor"*.	

Date	(Page 2 of 2) Case study period SEN Code of Practice	ADHD diagnosis
Oct 2002	**Year 2** **IEP (Learning and Behaviour) review:** • Trying very hard with behaviour and work, occasionally refuses to complete task but responds well to support given. **Targets include:** • Continue to build on improved concentration and mood swings reduced through rewards, extra attention, praise, etc. **Action** • Support within group from TA during numeracy & literacy • Weekly small group work with SEN teacher – 45mins • Continue on medication for ADHD.	Continue on medication for ADHD.
Feb 2003	**LBSS learning assessment** Behaviour observation and support strategies **Targets included:** • To participate more willingly in disliked lessons. **Strategies suggested:** Reduction of set task - to achievable level • Time out in classroom/corridor • Completing work in playtime • Informed of routine changes (verbally).	
Mar 2003	**IEP Review** • Behaviour much calmer at present but does not react well to reprimand or work he doesn't like • Seems less attention-seeking.	
Oct 2003	**Year 3** **IEP (Learning & Behaviour) review** • Deteriorating behaviour is affecting academic progress and posing a behaviour management issue. **Targets include:** • To apply himself more consistently in a given task, particularly in Numeracy • To stop opting out of lessons he doesn't like. **Action:** • Re-referral to **Educational Psychologist (EP)** for assessment • Referral to **LBSS** (Behaviour).	
Nov 2003	**LBSS IEP Supplement for pupils at School Action Plus** **Observation findings:** • Christmas play rehearsal in school hall. Very upset, distressed, silently crying from time to time. Spent nearly an hour lying, sitting or curled up on the floor. • Extreme mood swings. • Times when he will not co-operate with any instruction. • Particular difficulties with PE and hall-based activities (except assembly) - appears hypersensitive to noise in there.	
Jan 2004	**EP** visits school to observe. Edward refused to co-operate with **EP**.	Review of medication. Ritalin dose doubled.
Feb 2004	Behaviour improved after a few weeks on increased medication.	
Following case study period		
Sep 2004	**Year 4** **SENCO** reports that he has settled in well. Good relationship formed with Y4 teacher. Receives extra one-to-one support to increase basic literacy skills - responds well to individual attention.	Continuing on increased dose of medication.

11.4.2 Variability in ADHD symptoms

i) Variability across curricular contexts

Fixed Interval Sampling (FIS)

The extracts shown in Tables **11b** and **11c** (taken from extended analysis summaries in Appendices **11.1** and **11.2**) illustrate variability across contexts and in some cases over time as well. Table **11b** highlights settings where Edward achieved high percentages for 'No ADHD' behaviours and correspondingly low figures for ADHD behaviours.

Table 11b. Extracts from Fixed Interval Sampling Analysis (a)

Date, time, duration of recording period	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inatt	H/I
(i) **Fri 31 Jan 03** 11:09 – 19 mins	76	**Music** – Y2 class in music room, with music T, TA. Singing, composing, using instruments	86%	9%	5%
(ii) **We 26 Mar 03** 10:03 – 16 mins	64	**Assembly** – whole school in hall – hymn, story with pictures, prayer	81%	16%	3%
(iii) **Mon 9 Feb 04** 14:02 – 19 mins	76	**Art –** Y3 class painting on black paper, picture made up of different coloured 'dots' (pointillism)	84%	16%	0
(iv) **Mon 8 Mar 04** 13:34 – 27 mins	108	**Intra—school sports day** – Y3 in school hall. Team games, relay races	86%	12%	2%
(v) **Thur 1 Apr 04** 09:25 – 35 mins	140	**ICT** – Y3 class in ICT room - free choice of PC program. Edward works on his own	90%	9%	1%

(**i**) On 31st January 2003 Edward achieved 86% 'No ADHD' behaviours during a short music lesson taken by the music teacher. He was initially reluctant to sit on the floor in a circle with the rest of the class, but the TA gently coaxed him. She spent the lesson sitting behind him, offering support and encouragement and guiding him back on task when necessary. The lesson took place in a room used for watching TV, technology and music lessons and several of the recordings for his being ***easily distracted by extraneous stimuli*** and ***fidgeting*** were as a result of him looking round the room. He seemed to enjoy the singing and composing but was disappointed not to be chosen to play an instrument. (A totally different music lesson was observed the following year – see (**ix**) below).

(**ii**) When there was a specific focus in an assembly, Edward was usually able to concentrate. He enjoyed listening to stories, especially those accompanied by pictures. In the whole school assembly on 26th March 2003 he achieved 81% 'No ADHD' behaviours. Visitors from a local church conducted an assembly once a week in which a bible story was illustrated with brightly coloured pictures displayed on a large screen

using an overhead projector. This provided a focus for Edward's attention. On this particular day the story was 'The Sower and the Seed'. The recordings of his ***difficulty sustaining attention*** or being ***easily distracted by extraneous stimuli*** were made before and after the story, during the hymn and a prayer. Although the words of the hymn were projected on to the screen Edward was unable to read them and only joined in with a few familiar words or choruses. (See (**vi**) below for contrasting observation recordings made during an assembly).

(**iii**) Edward enjoyed creative activities and usually achieved high figures for 'No ADHD' behaviours in art lessons. On 9th February 2004, the novelty of using the 'wrong' end of the paintbrush to paint with seemed to appeal to him. He joined the class part way through this lesson (as he had been in a group of four taken out to work on Accelerated Literacy Skills). The teacher was hearing readers and a TA explained the task to Edward and the other three pupils. Many of his classmates had finished their painting and were engaged in reading or drawing activities, but he managed to focus on the painting task, achieving 84% 'No ADHD' behaviours, with only occasional recordings made of his ***difficulty sustaining attention*** or being ***easily distracted by extraneous stimuli***.

(**iv**) A lesson with a novel approach which offered an opportunity to run around seemed to appeal to Edward on 8th March 2004. An 'Intra-school sports day' was organised in which the school was divided into four teams. Each year group took part in team games and relay races in the school hall at various times of the day, a class at a time. At the end of the day the scores were totalled to find the winning overall team. Although it is more difficult to record observations in this setting than in the classroom, 86% 'No ADHD' recordings were made. The 12% recordings of 'inattention' were mainly when Edward was ***easily distracted by extraneous stimuli***, often when the teacher was explaining what was involved in the activities. On the odd occasions when he had ***difficulty following through instructions***, Edward's teammates would tell him what to do. He did not perform so well in a PE lesson described in ITS extract (**xii**) below.

(**v**) Edward enjoyed working on the computer and on 1st April 2004 achieved his highest recording of 90% 'No ADHD' behaviours. During this session several of the class were finishing off an earlier data input task. The rest of the class was split into two groups, one group using construction kits and the other working on the remaining available PCs

on programmes of their own choice. The teacher set up Edward's choice of programme for him and he spent much of the lesson focused on his computer. There were only 9% 'inattentive' behaviours recorded, mainly when Edward briefly had ***difficulty sustaining attention*** or was ***distracted by extraneous stimuli.*** These were towards the end of the lesson when he unsuccessfully tried to persuade a girl to work with him.

Table **11c** focuses on settings where Edward achieved high percentages for ADHD behaviours and some of the lowest figures for 'No ADHD' behaviours.

Table11c. Extracts from Fixed Interval Sampling Analysis (b)

Date, time, duration of recording period	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inatt	H/I
(vi) **Thur 6 Feb 03** 10:03 – 12 mins	48	**Assembly –** whole school in hall. Visitors tell Story of Lost Sheep, play guitar. Children perform actions	15%	46%	39%
(vii) **Tues 4 Mar 03** 11:22 – 27 mins	108	**Science** – (supply teacher) Y2 class 'Plants' - daffodil parts, discuss, worksheet	39%	44%	17%
(viii) **Wed 2 Apr 03** 10:45 – 55 mins	220	**Numeracy** – Y2 class on carpet, then at tables in groups for written work on 'money'	28%	56%	16%
(ix) **Fri 16 Jan 04** 11:55 – 35 mins	140	**Music** – Y3 class. Lesson involved listening, accompaniment, joining in with taped music	0	10%	90%

(**vi**) Although only a short observation period was undertaken in the assembly on 6th February 2003, the contrast between the behaviour recorded here and (**ii**) above is evident. This assembly was taken by some new visitors from a local church, one of whom played the guitar. The bulk of the assembly centred on the children joining in with actions to accompany the hymn. This did not appeal to Edward, and resulted in many recordings of his ***difficulty sustaining attention,*** being ***easily distracted by extraneous stimuli*** and ***fidgetting***, for example:

> *"10:08 E slightly unco-ordinated with actions. …Gives up!*
> *10:11 Running hands through his hair…Screws up his eyes…Shuffles from side to side …turns his head from side to side quickly…*
> *10:13 Looking, pointing up to ceiling…"* Extracts from field notes, 6th February 2003.

(**vii**) The children in Y2 were unfamiliar with the supply teacher who took the science lesson on 4th March 2003. Edward achieved only 39% 'No ADHD' behaviours, with 44% 'inattention' and 17% 'hyperactive-impulsive behaviours. He had ***difficulty sustaining attention***, was ***easily distracted by extraneous stimuli*** throughout the lesson and also ***fidgeted*** whilst sitting on the carpet for the teacher's introduction to the lesson

on plant parts. He was overheard whispering to several classmates about playtime. The class were then told that they could choose which tables to sit at for the written activity. They would normally sit in their (ability) groups. Edward chose to sit at a table with a boy and six girls, where he continued making plans for playtime. He was positioned so that his back was to the chalkboard. The teacher noticed this and offered him some support.

> *"11:39 E chatting to J – about playtime? T walks past, asks if he needs some help? No. Later she goes over and gives him help anyway …Lets him copy words from a sheet rather than from the board"* Extract from field notes, 4th March 2003.

(**viii**) The field notes contain references to Edward's dislike of numeracy lessons. During the teacher's introduction to the lesson on 2nd April 2003 the class sat on the carpet. The TA sat next to Edward, offering encouragement and where possible guiding him back on task. Most of the 16% 'hyperactive-impulsive' behaviours were recorded during this session when Edward ***fidgeted*** or squirmed on the floor. There were many recordings of ***difficulty sustaining attention*** included in the high 'inattention' figure of 56% for the lesson as a whole, despite the best efforts of the TA. When the children went to work in their groups, the TA began by sitting next to Edward, but was required to move round offering individual support to the other six members of the group. As he had not paid attention to the teacher earlier, some of the 'inattention' recordings included ***difficulty in following through instructions***. It was clear that he did not like 'sharing' the TA with the others. At one stage when the TA was working with another boy,

> *"11:29 Edward calls over to check with TA that he is 'doing it right'. 'Yes,' (she offers a few words of praise, encouragement)"* Extract from field notes, 2nd April, 2003.

At other times he lost interest and stopped working when the TA was with other children, and on one occasion he wandered over to the teacher, seeking attention. In all, he only managed 28% 'No ADHD' behaviours.

(**ix**) On the morning of 16th January 2004 (before the increase in Edward's medication dose) several changes had been made to the timetable, as there were builders on site. The music lesson was taken in the classroom instead of the hall as was usual during the follow up year. The music teacher took the lesson and the class teacher remained in the

room. Unfortunately Edward refused to take any part in the lesson, choosing instead to crawl around the room trying to attract attention throughout the whole of the lesson. Most of the 90% 'hyperactive-impulsive' recordings were therefore for ***unauthorised movement in the classroom***. The 'inattentive' behaviours were recorded at the beginning and end when he was sitting still but not ***sustaining attention*** or ***listening.*** After failing to persuade him to join in, the class teacher, along with everyone else, ignored Edward for the majority of the lesson.

Instantaneous Time Sampling (ITS)

The extracts shown in Table **11d** are taken from extended analysis summaries (see Appendices **11.3** and **11.4**).

Table 11d. Extracts from Instantaneous Time Sampling Analysis

Date, time at which 10-minute recording period began, (recordings made at 30-second intervals), part of lesson	Lesson	Recordings out of 20					
		Target pupil Edward			Comparison Keith		
		0	Inatt	H/I	0	Inatt	H/I
(x) Thur 6 Feb 03	**Numeracy -** Y2 'Division'						
11:30 – Start	Class on carpet, practical activity	19	1	0	20	0	0
11:40 – Middle	As above, then in groups	6	12	2	17	2	1
11:50 – End	Practical 'division' activity	6	7	7	16	4	0
(xi) Wed 9 Apr 03	**Literacy -**'The Selfish Crocodile'						
09:01 – Start	On carpet, T reads story, discuss	13	4	3	16	4	0
09:26 – Middle	At tables, extended writing	4	10	6	16	4	0
10:00 – End	More extended writing	1	8	11	18	2	0
(xii) Fri 16 Jan 04	**PE –**Dance. Y3 in hall, Y4 T						
13:38 – Start	Warm up, 'hiding'	9	6	5	19	1	0
13:58 – Middle	'Exploring and attacking' movements	5	2	13	19	1	0
14:13	***Edward sent out of hall***	-	-	-	-	-	-

(**x**) Edward's figures for 'No ADHD' behaviours in numeracy lessons were generally low (see also extract **viii**). There is one notable exception. On 6th February 2003 the teacher used chocolate 'Smarties' sweets in a practical demonstration of division sums. A group at a time stood up and were handed sweets to use in several practical activities, at the end of which the pupils were allowed to eat their Smarties. The whole class paid attention to this part of the lesson, and Edward managed 19/20 'No ADHD' behaviours, compared to Keith's 20. For the middle and end observation periods when the groups worked at tables on worksheets and other practical division activities using multi-link cubes, Edward only scored 6 and 6 'No ADHD' behaviours, even with TA support. The majority of 'inattention' behaviours were for ***difficulty sustaining attention.*** Towards the end of the last recording period the TA had left the room. Edward lost interest, got

up and wandered over to the book corner, recorded as ***unauthorised movement in the classroom***. Keith achieved scores of 17 and 16/20.

(**xi**) As mentioned earlier, Edward enjoyed listening to stories. In the Y2 literacy lesson on 9th April 2003 he achieved 13/20 'No ADHD' behaviours for the carpet session when the teacher read the story, compared to Keith's 16. Recordings for ***difficulty sustaining attention,*** being ***easily distracted by extraneous stimuli*** and ***fidgeting*** were made towards the end of the first observation period when the teacher was asking the class questions based on the story. When asked to go and sit in their groups for the written task, Edward wandered over to sit at the spare table by the window. Then he went to sit at the yellow group's table. The TA supported the red group, Edward's usual group. During the middle recording period Edward remained with the yellow group, where he had no TA support, ***talked excessively*** and had ***difficulty sustaining attention.*** He then began ***unauthorised movement in the classroom*** before joining the class on the carpet where he again had ***difficulty sustaining attention*** and ***fidgeted.*** Consequently he achieved only 4 and 1/20 'No ADHD' behaviours (some of the lowest overall for a literacy lesson), compared with Keith's 16 and 18/20.

(**xii**) As described in FIS extract (**ix**) above, Edward exhibited particularly challenging behaviours on 16th January 2004. The PE lesson on that day, taken by the Y4 teacher, focused on dance movements linked to the history topic of Invaders and Settlers. For the first observation period Edward managed 9/20 'No ADHD' behaviours during the (free choice) warm up exercises to music, compared to Keith's 19. For the middle period the children were asked to act out movements conveying exploring a village, then attacking imaginary enemies. Edward spent much of this period trying to gain attention by hiding inside the equipment store and then behind a curtain, before having a short tantrum when asked by the teacher to sit on the side of the hall, leading to 5/20 'No ADHD' recordings and 13/20 'hyperactive-impulsive' recordings, mainly for ***unauthorised movement.*** Keith achieved 19 'No ADHD' recordings. Towards the end of the lesson a third observation period had to be abandoned as the teacher finally sent Edward out of the hall. This followed his climbing on to a bench and then on to the mat trolley despite several warnings from the teacher who had repeatedly offered him opportunities to redeem himself. An interesting comparison may be made between this lesson and the Intra-school sports day in FIS extract (**iv**) above, which had a more structured format and took place following the increased dose of medication.

(Insert Table 11e here)

(Insert Table 11f here)

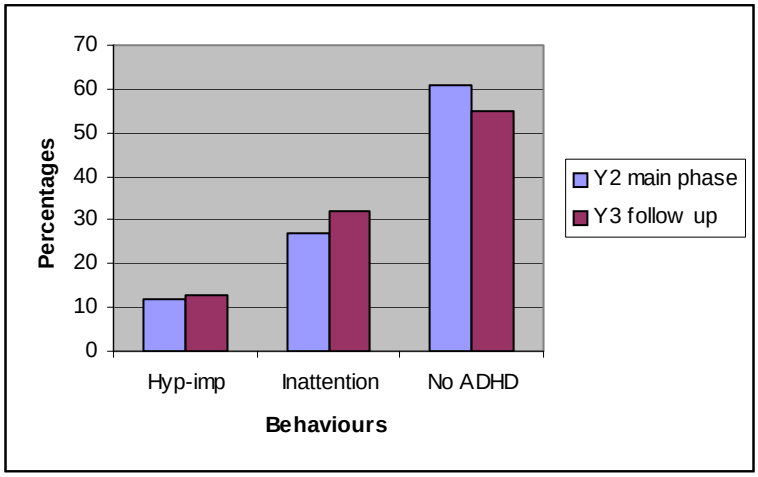
(ii) Variability over time

Tables **11e** and **11f** provide details of observation recordings over both research phases. Edward moved from Y2 to Y3, thus making the transition from KS1 to KS2. As mentioned previously, in Y3 there was a deterioration in his behaviour which posed behaviour management problems for the school. A doubling of 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 follow up study was undertaken it was possible for the researcher to observe first-hand the changes in Edward's behaviour. Further analyses of observations were undertaken (see below). It was important to be aware of this change when examining variability in his behaviours both over time and across contexts.

Fixed Interval Sampling (FIS)

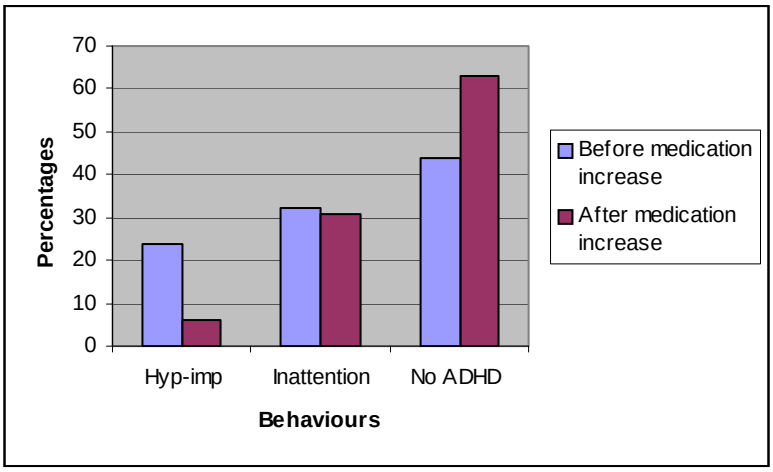
The information included in the following figures has been taken from the more detailed Table **11e.** It can be seen from Figure **11.1** that the proportion of a lesson across all settings Edward spent displaying 'hyperactive/impulsive' (hyp-imp) behaviours was similar for both years (12% and 13%). Figures for 'inattention' were higher in both years than those for 'hyperactive-impulsive' behaviours and increased from 27% to 32% in Y3. 'No ADHD' behaviours decreased from 61% in the main phase (Y2) to 55% in the follow-up phase (Y3).

Figure 11.1. FIS recordings over time (all settings) – Edward



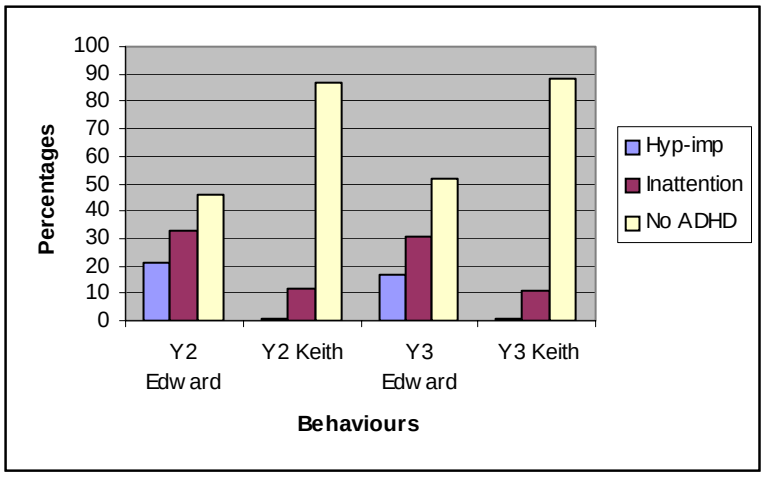
A further analysis of the FIS observations (shown in Figure **11.2**) found that Edward's overall figure for 'hyperactive-impulsive' behaviours for the period prior to the increased medication was 24%, decreasing dramatically to 6% after the increase. 'Inattentive' behaviours reduced from 32% to 31% and consequently there was an increase in 'No ADHD' behaviours from 44% to 63%.

Figure 11.2. FIS recordings before and after increase in medication – Edward



Instantaneous Time Sampling (ITS)

Figure 11.3. ITS recordings over time – Edward and Keith (comparison)



It can be seen in Figure **11.3** (taken from Table **11f**) that Edward's 'score' for 'hyperactive-impulsive' behaviours was 21% in the main phase and 17% the following year. 'Inattentive' behaviours decreased from 33% to 31% in Y3 and 'No ADHD behaviours' increased slightly from 46% to 52%, compared to Keith's increase from 87% to 88%. The differences in ITS observation averages before and after the increase in medication are not so apparent as those in the FIS observations detailed above. This may be due to the nature of each type of observation (see Chapter **5** for details).

11.4.3 Associated difficulties

Self-esteem

It is difficult to ascertain Edward's level of self-esteem, as there appeared to be some variability over the two years of the study. During the main phase his self-esteem score of 16/24 was marginally above the class average of 15. The following year his score decreased to 12/24, below the increased class average of 16. He was one of 10 pupils whose score on the questionnaire was lower than in the main phase (14 pupils had an increased score and the scores of 5 pupils remained the same).

Social relationships

Although informal playground observations found that other children often involved Edward in their games, no one chose him as a playmate when answering the sociometric question added to the questionnaire. He chose the same two girls each year and in Y3 asked if he could add the name of a third girl. There are several references in the field notes about his lack of the social skills necessary to make friendships. For example when in Y1,

> *"A very strong attachment was formed with a girl in his class upon entry to school. Unfortunately, she has left the school and Edward is at a complete loss"* Extract from LBSS summary, 18th June 2002.

There are references in the field notes to Edward's *"lack of appropriate inhibition"* in school (Selikowitz, 2004, p.76). These included inappropriate hugging, kissing and touching of his peers.

Oversensitivity

There are several references to Edward being the only pupil in class to take off his sweatshirt, complaining he was too hot. He also appeared hypersensitive to loud noises.

Emotional problems

Edward was easily upset, often crying or having angry outbursts. He very rarely smiled and often made references to death and dying.

> *"He presents as being unhappy at times and can talk in violent terms with regard to injuring himself and others"* Extract from class teacher's view in LBSS summary, 18th June 2002.

Effects of food additives

There is anecdotal evidence that some food colourings and flavourings may play a minimal role in triggering hyperactive behaviour (Kinder, 1999a; DuPaul and Stoner, 2003). During the numeracy lesson on 6th February 2003, detailed above in ITS extract (**x**), the field notes contain the following:

> *"11:37 Edward sits down, sulks, says 'I'm not allowed Smarties … they make me hyper'. T tells him he can have something else out of the sweet jar later, saying 'Well done, you were very sensible – the colouring on some sweets might not be good for you'"* Extract from field notes, 6th Feb 2003.

11.5 Summary

Identification and assessment

There is evidence of a multi-disciplinary approach both in the SEN Code of Practice process (DfES, 2001a) and in the diagnosis and management of ADHD. In addition to teaching staff, another 6 professionals from three agencies were involved in meeting Edward's needs over four years (BPS, 2000a; DfES, 2003; 2004a) (see Table **14b**).

Variability in ADHD symptoms across contexts and over time

There did not appear to be any consistent pattern to Edward's behaviour or mood swings, but discussions between the researcher and class teachers considered that events in his home situation affected him (see section **11.3**). Edward displayed a higher proportion of ADHD behaviours:

- when there were changes to the routine, including a supply teacher taking the class;
- during numeracy lessons;
- in less structured PE lessons; and
- prior to an increase in medication dose in Y3.

In general, fewer ADHD behaviours were observed when he:

- worked on the computer;
- was engaged in creative activities;
- was focused on listening to a story; and
- received plenty of support and had a good relationship with the teacher or TA.

Although there is evidence of minor variability in Edward's ADHD symptoms from Y2 to Y3 overall, the most marked difference is demonstrated in Figure **11.2**, before and after the increase in the medication dose. He achieved lower ITS scores than the comparison pupil for 'No ADHD' behaviours in both years.

Chapter 12

Case study 5: Freddy

12.1 School 5 setting

This community first school had 140 pupils on roll during the academic year 2002/2003. There were five mixed ability classes from Reception to Y4 in a one-form entry. There were also 35 children in the nursery. The percentage of pupils on roll who were eligible for free school meals was above the national average. On entry into the school, children's attainment is well below that expected for their age and the proportion of pupils with SEN is above average (OFSTED, 2003b). Although several pupils were reported as displaying ADHD characteristics the school survey in **Part 1** of the research revealed that in 2003 there were no pupils with a formal diagnosis.

Classroom setting

During the summer term 2003 Freddy was on the roll of a mixed-ability Y4 class which consisted of 29 pupils. This number is above the national average KS2 class size in primary schools (DfES, 2004b). He spent four afternoons in this class, with individual SSA support. In the mornings and one afternoon he attended a nurture group in which there were 15 pupils (10 from Y3 and four from Y4). Freddy was in the lowest Y3/4 ability set for numeracy. The Deputy Headteacher (DHT) and an experienced TA took the lessons in the nurture group classroom. The DHT was responsible for teaching the Y4 class in the afternoons.

12.2 School 8 setting

School 8 is a large oversubscribed middle school. Some of the areas from which pupils come to the school are socially and economically deprived, although the proportion of pupils receiving FSM is in line with the national average, as is the proportion of pupils with SEN (OFSTED, 2001b). In 2003/2004 there were approximately 500 pupils on roll. This includes 16 mixed ability classes from Y5 to Y8 in a four-form entry. Information provided on the questionnaire in the ADHD school survey in **Part 1** of the present research confirmed that in 2003 there was one pupil with a formal diagnosis.

Classroom setting

During the summer term 2004 the follow up phase of the case study was undertaken in a mixed-ability class of 32 children in Y5. This number is higher than the national average KS2 class size (DfES, 2004b). Arrangements for lessons were similar to those in a secondary school, with pupils moving to various classrooms for curriculum areas taught by different teachers. The pupils were taught in ability sets for literacy and numeracy. Freddy was included in a small literacy group taken by the SENCO and set 4/5 for numeracy.

12.3 Freddy

Freddy lived with his mother, her partner, two brothers and two sisters. He demonstrated a caring attitude towards his little sister who attended the nursery attached to the school, but there is a history of animosity between Freddy and the brother who is a year older. Both older brothers have been excluded from school in the past and there was ongoing involvement of social services with the family. At the start of the case study in April 2003 Freddy was one of the younger members of his class, aged 8 years 9 months. In Y4 non-statutory tests he achieved level 3c in maths, but was not tested in literacy.

Lewis (non-ADHD comparison, school 5)

Lewis was aged 9 years 7 months at the start of the case study. In Y4 tests he achieved level 3a in literacy and maths.

Neil (non-ADHD comparison, school 8)

Neil lived with his parents and older sister. He was in the same numeracy set (4/5) as Freddy.

12.4 Findings

12.4.1 Identification and assessment process

Table **12a** provides a detailed summary of the identification and assessment processes undertaken for Freddy. At the time of the case study he had not completed formal assessment for a diagnosis of ADHD.

Table 12a. Identification and assessment process – Freddy (highlighting agencies involved)

Date	(Page 1 of 3) Prior to case study period SEN Code of Practice	ADHD diagnosis
	(Records prior to Y2 not available)	
Dec 2000	***School 5*** **Year 2** Attends **Pupil Referral Unit (PRU)** 3 days; mainstream school 2 days a week.	**No formal ADHD diagnosis**
Feb 2001	**Learning Behaviour and Support Service (LBSS) Individual Education Plan (IEP) review (PRU) – areas of concern** include: Slow academic progress; inappropriate language; poor playground behaviour; poor co-operation skills. **Targets**: to sit quietly; put hand up for attention; treat resources with respect; remain on task for 5 minutes – independently.	
May 2001	**LBSS IEP review (PRU)** **Strengths** - eager to please – responds well to praise **Evaluation** – improvement in most target areas, although *"constantly fidgets"* **Targets –** as above. Remain on task for 10 minutes.	
Autumn 2001	**Year 3** **LBSS report:** "Behaviour needs to be kept on tight rein. Noticeable difference in him after comes in from playtime … more boisterous … takes longer to settle".	
Mar 2002	**IEP review:** **Areas of concern:** Rough playground behaviour; slow academic progress **Targets:** To sit quietly during literacy, numeracy, 'carpet times' for 10 minutes without fidgeting. To settle to tasks and work independently for 10 minutes. To play co-operatively in the playground for 15 minutes. **Recommendation:** return to mainstream school full-time. **Teaching assistant (TA)** to monitor at lunch and playtimes.	
May 2002	**School Action Plus stage** **School Individual Behaviour Plan review:** **Target evaluation:** To consolidate 10 minutes attention to task To sit for 10 minutes - no fidgeting; no calling out To play co-operatively outside for 15 mins with support + one other chosen child (not sustained as shown by charts. May need to adjust to 10 mins and earn 5 mins). **LBSS review of progress** Behaviour in school can still be challenging. Often needs an adult to remind him of expected behaviour, especially during less structured times He will try to manipulate staff and 'plays' one off against another. Home - very competitive with siblings. **Suggested targets for school Individual Behaviour Plan (IBP):** To improve self control in class; to put up hand for attention; to take turns during discussions To play co-operatively in the playground for 15 minutes, with an adult in a small group.	

Date	(Page 2 of 3) Case study period SEN Code of Practice	ADHD diagnosis
Sep 2002	**Year 4** **IEP targets** include: To improve self control To work in **Nurture group**, mornings; Y4 class group, afternoons *"Going forward for Statutory Assessment" (S.A)*	**No formal ADHD diagnosis**
Oct 2002	**Checklist of potentially disruptive classroom behaviour**, completed by school, includes: Taps hands on furniture; changes seat; walks about in class; pokes other pupils; verbally threatens other pupils; close to threatening adults; calls out to teacher.	
Oct 2002	Letter from **Educational Psychologist (EP)** includes " … great fluctuation between his behaviour in the security of the morning Nurture group …outside the class and in the larger afternoon group … very challenging behaviour which threaten lunchtime supervisors, staff & other children …"	
Dec 2002	**Statement of SEN** extracts: "Main focus of Freddy's SEN lies in his problematic behaviour which is apparent both in the home and school environments. **Communication & Interaction:** Early in school career received **Speech and Language Therapy (SALT)** - discontinued due to satisfactory progress. Some residual SAL difficulties which derive mainly from a limited expressive vocabulary & poor listening skills. **Cognition & Learning:**. Functioning approximately 2yrs below expected at age. **Behaviour, emotional and social development (BESD):** Behaviour .. main concern for his educational progress … struggling with social skills & finds it difficult to co-operate with others in playground. Unable to play with other children & is a danger to them if left unsupervised as his play is very physical & he intimidates younger children by cornering them until they give in to him. **Objectives of provision:** To assist Freddy to channel his behaviour within acceptable bounds. To develop his social interaction skills & awareness of feelings & needs of others. To improve his attention & concentration span. To improve his functioning in basic skills. **IEP** taking broad aims as above. Provision: Local mainstream in consultation with specialist teacher, **LBSS.** **TA** - 10 hours per week + 5 hours for lunch period.	
Jan 2003	**IEP** **Areas of concern:** Behaviour; literacy **Targets include:** To play co-operatively with one pupil in the playground for 5 minutes (with TA support); to remain seated and quiet during teacher input 2 x daily.	
Jul 2003	**SEN review meeting:** Co-operation levels still fluctuate; can be totally disruptive; shouting out; tries to grab other people's possessions. **Further action:** Require adult supervision in any free situation. His statement is because of his behaviour. Give Freddy a chance to succeed! e.g. football.	
Jul 2003	**IEP targets** include: follow instructions given by adults on duty at break time; remain in the dining hall until given permission to leave; sit properly at the table when asked to do so; raise his hand for attention rather than call out **Classroom support** (10 hours per week) to support daily practice; **lunchtime** (5 hours).	

Date	(Page 3 of 3) SEN Code of Practice	ADHD diagnosis
Sep 2003	**Year 5 – Middle School (*school 8*)** **Amendment to Statement of SEN.** Confirms continued 10 hours support + 5 hours lunch time.	**No formal ADHD diagnosis**
Oct 2003	**IEP Objectives include:** Be prepared to work straight away Be able to tell teacher/TA what he has to do Play with one child without causing trouble, lunch and playtime Behave properly in the dining hall.	
Jan 2004	**IEP** **Areas of concern** include: Gets angry ("*when children are being horrible"*) Does not comply with rules regarding being on report No regard for own property or that of others. **Objectives:** To continue good behaviour at beginning of lessons and: Be prepared to work straightaway Sit with all 4 chair legs on floor - no swinging To be able to tell T/TA what has to do Play with one friend under supervision without causing any trouble, at dinner & break times To attend lunch games clubs on Tuesdays & Thursdays Behave properly in dining hall.	
May 2004	**Emergency review meeting – pupil at risk of exclusion** Summary: Can show affection & emotion. Equally can be very demanding & difficult - both in & out of lessons. Now reacts well to praise and success. Has been rude, unkind & disobedient with 1:1 support Is at risk of exclusion because of blatant disregard for school rules and anti-social behaviour. School recommend additional 1.25 hours of 1:1 **TA** is provided by LEA. **Progress towards existing targets (see Statement Dec 02):** Poor attitude to support; report sheets often left; refusal to report to head of Y5 - now reporting to headteacher (HT) (not regularly) Resents close support at these times & does his best to 'lose' TA; refusal to attend games clubs Constant attention required. Can be disruptive & awkward. **Recommendations of review:** 10 hours lesson time & 5 hours lunchtime support to continue 1.25 hours break time support to be funded by LEA.	
Following case study period		
Sep 2004 **Dec 2004**	**SENCO** reports informally: Several odd days exclusion at end of Y5. **Year 6** Begins '50-50 course': half week at *school 8*, half week at **PRU**. Not coping well with this arrangement. **SENCO** believes there is a possibility he may have to attend **PRU** full-time.	

12.4.2 Variability in ADHD symptoms

Case study evidence found that Freddy displayed many of the ADHD characteristics and more than a peer comparison (see examples of symptoms and associated features included in Table **12a**).

i) Variability across curricular contexts

Fixed Interval Sampling (FIS)

As can be seen in Figure **12.1**, a lower proportion of ADHD behaviours were observed in the nurture group in the main phase than in the Y4 class group. He 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 (67% in the nurture group compared to 56% in the main class group).

Figure 12.1. FIS recordings in nurture group and main Y4 class setting – Freddy

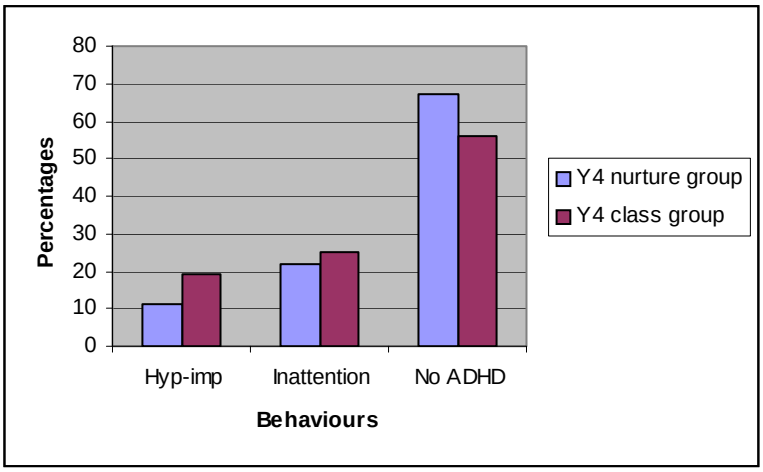
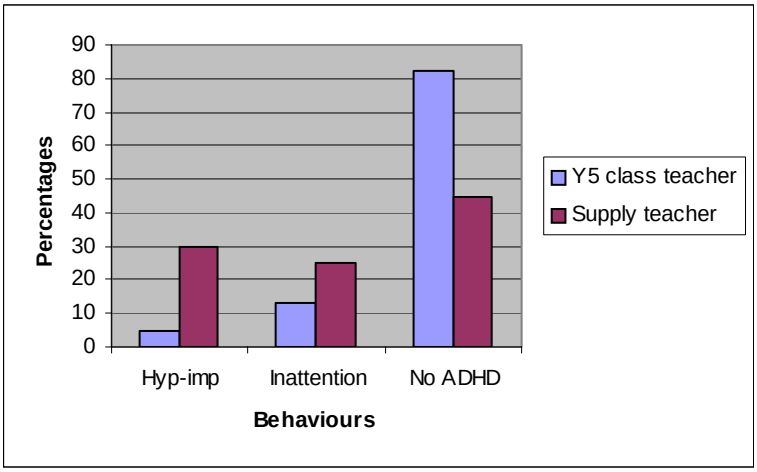


Figure 12.2. FIS averages for numeracy lessons with different teachers in Y5 – Freddy



In the middle school (school 8) Freddy's behaviour fluctuated across lessons according to teachers. Figure **12.2** clearly demonstrates the marked variability observed in numeracy lessons in Y5. When taught by his registration class teacher, he displayed 5% 'hyperactive-impulsive', 13% 'inattentive' and 82% 'No ADHD' behaviours. When a supply teacher took the lesson, Freddy's figures were 30% 'hyperactive-impulsive', 25% 'inattentive' and 45% 'No ADHD' behaviours.

The extracts shown in Tables **12b** and **12c** have been taken from extended analysis summaries in Appendices **12.1** and **12.2**. Table **12b** highlights settings where Freddy achieved high percentages for 'No ADHD' behaviours and correspondingly low figures for ADHD behaviours.

Table 12b. Extracts from Fixed Interval Sampling Analysis (a)

Date, time, duration of recording period	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inatt	H/I
(i) School 5 Wed 7 May 03 11:47 – 16 mins	64	**Circle Time (PSHE)** NG, n = 15 (Y3/4) Recap rules, play social skills games	96%	2%	2%
(ii) Fri 20 Jun 03 11:47 – 20 mins	80	**ICT** – work in library area outside Y4 classroom on individual choice of programme	92%	4%	4%
(iii) School 8 Wed 5 May 04 11:24 – 53 mins	212	**Literacy** – Y5 SEN group, n = 14. Finish writing sentences; reading; watch video then discuss	84%	8%	8%
(iv) Mon 14 Jun 04 11:24 – 47 mins	188	**PE** – Y5 boys outdoor games. Practice cricket skills, play non-stop cricket game	92%	5%	3%

(**i**) On 7th May 2003 Freddy achieved 96% 'No ADHD' behaviours (his highest overall) in the nurture group. Although this was a relatively short observation period at the end of the morning, it was obvious that the 'Circle time' format for the PSHE lesson appealed to Freddy. The recordings when he had ***difficulty sustaining attention*** and ***fidgeting*** were made early on as he settled into the session. In the circle Freddy sat next to the TA who occasionally offered a gentle reminder to remain on task. The focus was on social skills, including paying compliments and using 'gentle touches' when in the playground. This was particularly aimed at Freddy as he had difficulty in playing appropriately with his peers.

(**ii**) On 20th June 2003 in school 5 Freddy was amongst several children who were allowed to use a computer and given a free choice as to the programme they used. He was always enthusiastic about using a computer. There were several recordings for

difficulty sustaining attention and ***unauthorised movement***. The teacher spent a disproportionate amount of time helping him.

> *"11:50 Freddy runs after T – wants her help… Problem finding particular programme he wants…*
> *11:57 Keeps grabbing T's arm, pulling her towards his PC …He wants a particular programme … T doesn't think it is loaded"* Extracts from field notes, 20th June 2003.

When he finally decided on another game, his SSA sat with him and he remained focused, achieving 92% 'No ADHD' behaviours.

(**iii**) Freddy achieved 84% 'No ADHD' behaviours for a literacy lesson in the Y5 SEN group in school 8 on 5th May 2004. On this particular day, in addition to the teacher (who was also the SENCO), there were three TAs in the group, providing a good adult:pupil ratio. During the lesson the group watched a 15-minute video and throughout this Freddy gave his complete attention, thus increasing his overall 'score' for the lesson as a whole. The majority of ADHD behaviours were displayed towards the end of the lesson when he had ***difficulty sustaining attention***, ***fidgeted*** and ***occasionally blurted out answers*** or ***interrupted others***.

(**iv**) Another high score for 'No ADHD' behaviours (92%) was recorded for Freddy in school 8 during an outdoor games lesson on 14th June 2004 which concentrated on cricket skills. The PE teacher gave him the responsibility of helping to carry out the cricket equipment. There were one or two occasions when Freddy either had not ***listened*** or not ***understood the teacher's instructions*** and he also had ***difficulty waiting his turn*** to bat. This type of activity is difficult to record, but it was obvious that Freddy enjoyed this type of lesson. He demonstrated good throwing skills and was very competitive, complaining when others did not catch the ball and briefly sulking when he was 'out'.

Table **12c** below focuses on settings where high percentages were recorded for ADHD behaviours.

Table 12c. Extract from Fixed Interval Sampling Analysis (b)

Date, time, duration of recording period	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inatt	H/I
(v) School 5 Wed 9 Jul 03 09:31 – 43 mins	172	**Numeracy** – Y3/4 ability group, n = 22. Multiples of 4, oral then worksheet	37%	27%	36%
(vi) Thu 10 Jul 03 13:21 – 25 mins	100	**RE** – Y4 class. Recap previous work. Hinduism, ceremonies	37%	34%	29%
(vii) School 8 Wed 5 May 04 13:10 – 56 mins	224	**Numeracy** – ST takes Y5 group 4/5, n = 21. Practical 'money' activity – use plastic coins, set sums for partner	45%	25%	30%
(viii) Thu 20 May 04 14:14 – 53 mins	212	**Music** – Y5 in music room. Composition, use instruments to accompany song	25%	36%	39%

(**v**) On 9th July 2003, there were several factors that may have affected Freddy's behaviour throughout the day:

a) he had been sent home at lunchtime two days previously for hurting another boy during a disagreement in a football match and swearing at a TA when reprimanded. He was now banned from playing football at playtimes;
b) it was his birthday; and
c) players from the local football team were coming in to the school to organise a 'Penalty Shoot-out' competition.

Freddy achieved 37% 'no ADHD' behaviours in the numeracy lesson on that day. Many of the 36% 'hyperactive-impulsive' behaviours were recorded for ***talking excessively*** to other pupils. He made several unkind references to other children and at times ***blurted out answers, interrupted others*** and ***fidgeted***. There were recordings for ***unauthorised movement in the classroom***, and twice he threw himself dramatically on to the floor. 'Inattention' recordings included his ***difficulty sustaining attention*** and being ***easily distracted by extraneous stimuli***.

(**vi**) In the RE lesson on 10th July 2003 Freddy had great difficulty concentrating and again only achieved 37% 'No ADHD' behaviours. The 34% for 'inattention' behaviours (***difficulty sustaining attention*** and being ***easily distracted by extraneous stimuli***) was the highest recorded over the two years of the study. The 'hyperactive-impulsive' recordings were largely for ***fidgeting***, and occasionally ***blurting out answers***. He had brought a small toy motorbike into the lesson and was more interested in that than what the teacher was saying.

> *"13:25 Fiddling with a pencil, then toy motorbike (SSA removes motorbike). He carries on fiddling with pencil.*
> *13:36 Freddy has his head on the table. SSA asks him to sit up. He looks on spare table behind him at motorbike… Picks it up – asks if he can put it in his pocket? SSA says 'Yes'."* Extract from field notes, 10th July 2003.

(**vii**) During the numeracy lesson in school 8 on 5th May 2004 taken by a supply teacher, Freddy achieved 45% 'No ADHD' behaviours, 25% 'inattention' and 30% hyperactive-impulsive behaviours - a marked difference to those lessons taken by the regular teacher (see Figure **12.2**). The TA who offered individual support to Freddy was not in the lesson, but there was another TA offering general support in the classroom. The children worked in pairs of their own choosing, although the TA helped Freddy to choose his partner. The lesson, involving the use of plastic coins to work out answers to 'money' sums, was too unstructured for Freddy. He had ***not listened*** to the teacher's instructions and had ***difficulty sustaining attention***. He spent much of the lesson throwing coins around, getting down on the floor under the tables to pick them up and going over to other tables collecting other coins (***unauthorised movement in the classroom***). The only times Freddy managed to focus were when the teacher briefly sat with him and explained the task and towards the end of the lesson when all the coins had been put away and the children played a game of 'Buzz'.

(**viii**) In the Y5 music lesson on 20th May 2004 only 25% 'No ADHD' behaviours were recorded (Freddy's lowest score overall. The 39% for 'hyperactive-impulsive' behaviours was the highest recorded). These lessons were taken in the music room by the music teacher and provided plenty of distractions and opportunities for fidgeting and inattention, not only for Freddy, but also for several others in the class. Freddy constantly chatted to his neighbours (***talked excessively***) even when the teacher was talking or playing the piano. The teacher allowed him to play a glockenspiel but he was unable to concentrate properly on this for long.

> *"14:32 Freddy bangs away with beaters while T organises the rest of the class …*
> *14:39 F playfully (?) hits boy with a beater …*
> *14:41 Banging beaters on table, chair … tries to put them into his ears!*
> *14:44 Starts 'dismantling' glockenspiel …*
> *14:45 Banging neighbour with beaters"* Extract from field notes, 20th May 2004.

Instantaneous Time Sampling (ITS)

The extracts shown in Table **12d** are taken from extended analysis summaries (see Appendices **12.3** and **12.4**).

Table 12d. Extracts from Instantaneous Time Sampling Analysis

Date, time at which 10-minute recording period began, (recordings made at 30-second intervals), part of lesson	Lesson	Recordings out of 20					
		Target pupil Freddy			Comparison Lewis/Neil		
		0	Inatt	H/I	0	Inatt	H/I
(ix) School 5	**RE/art lesson** Y4 class						
Thur 15 May 2003	**RE** – 'Doubting Thomas' worksheet						
	Art – make model of statue in clay						
13:22 – Start	Teacher introduces 2 activities	9	6	5	15	5	0
13:35 – Middle	Freddy – RE; Lewis – art	12	5	3	20	0	0
14:01 – End	Freddy – art; Lewis - RE	20	0	0	19	1	0
(x) School 8							
Wed 5 May 04	**Science** Supply T takes Y5 class						
10:06 – Start	Teacher introduces activity	10	7	3	16	3	1
10:26 – Middle}	{Design and make a poster depicting	4	2	14	19	1	0
10:36 – End}	{science work on 'Sound'	16	1	3	17	2	1
(xi) Wed 26 May 04	**RE** Supply T takes Y5 class						
14:16 – Start	Read through Lord's prayer, discuss	8	8	4	14	6	0
14:29 – Middle}	{Cut and stick into exercise books	4	6	10	13	7	0
14:53 – End}	{Annotate, decorate prayer	1	6	13	15	5	0
(xii) Tue 29 Jun 04	**Visit from firemen** – Home Safety						
10:08 – Start	Talk on smoke alarms, fireman 1	20	0	0	20	0	0
10:18 – Middle	As above	18	2	0	18	2	0
10:29 – Middle	House fire escape plan, fireman 2	17	2	1	19	1	0
10:40 – End	As above	14	5	1	17	3	0

(**ix**) The lesson on 15th May 2003 in the Y4 classroom was a combined RE/art lesson. Following the teacher's introduction, half of the class started working on an RE worksheet and the other half worked with a TA on clay modelling. They then changed over. Freddy and Lewis were in different groups. For the first recording period, Freddy sucked his thumb, ***fidgeted*** and had ***difficulty sustaining attention***, despite the best efforts of his SSA to keep him on task. He achieved 9/20 'No ADHD' behaviours compared to Lewis's 15. He was keen to be chosen to make a clay model, but was included in the RE group during the second recording period. With SSA support and a worksheet to focus on, he achieved a slightly higher recording of 12/20 'No ADHD' behaviours. This compares with Lewis's figure of 19 (recorded in the final period when he was engaged in the RE task). Freddy enjoyed creative work and he matched Lewis's 20/20 when engaged on the clay modelling activity.

(**x**) On 5th May 2004 the Y5 Science lesson was taken by a supply teacher. It was an informal lesson in which the children were asked to design a poster which depicted the science activities they had covered during the term. Freddy's TA was in the lesson, but

there was not room for her to sit next to him. During the first observation period he scored 10/20 'No ADHD' behaviours, compared to Neil's 16. He ***fidgeted*** and had ***difficulty sustaining attention*** during the teacher's introduction and screwed up his first attempt before asking the TA for help. In the middle recording period he lost interest and displayed 14 'hyperactive-impulsive' behaviours (his highest overall) and only 4 'No ADHD', compared to Neil's 19. Despite the TA trying to coax him, he spent some minutes with his head down under the desk, refusing to do any work. The TA ignored him and went to work with other children. Freddy did not like sharing the TA with others, and began to work again, at which point the TA made a point of offering him praise and encouragement. This led to his score of 16/20 'No ADHD' behaviours in the final recording period, almost matching Neil's 17.

(**xi**) The RE lesson on 26th May 2004 was another occasion when a supply teacher took the Y5 class. Unfortunately Freddy's TA was absent that day and it was obvious that he missed her individual support in some of the lessons. The lesson was relatively unstructured. All 8 'inattention' behaviours in the first recording period were for ***difficulty sustaining attention*** and the 4 'hyperactive-impulsive' behaviours included ***fidgeting*** and ***blurting out answers***. Freddy became more hyperactive as the lesson progressed when the class worked on a 'cut and stick' activity. For the final recording period he had been returned to the classroom after having left too early to attend a review meeting. He was completely unsettled, as he had packed away his work, believing that he would be going home after the review. He wandered around the classroom (***unauthorised movement***), ***talking excessively*** to others and generally behaving in a silly manner. His score of 1/20 'No ADHD' behaviours was his lowest overall. Many of the other children were less well behaved in this lesson, and Neil's scores for 'No ADHD' behaviour were below his average at 14, 13 and 15/20.

(**xii**) On 29th June 2004, Freddy matched Neil's scores of 20 and 18 'No ADHD' behaviours during the first part of a talk given to the class by local firemen on a visit to school 8. For the third recording period Freddy scored 17, compared to Neil's 19. It was only towards the end that there were more recordings for Freddy's ***difficulty sustaining attention***. The novelty of the situation and TA support probably helped ensure he maintained his attention early on, together with the promise that the class would later be allowed to have a look round the fire appliance outside.

(Insert Table 12e here)

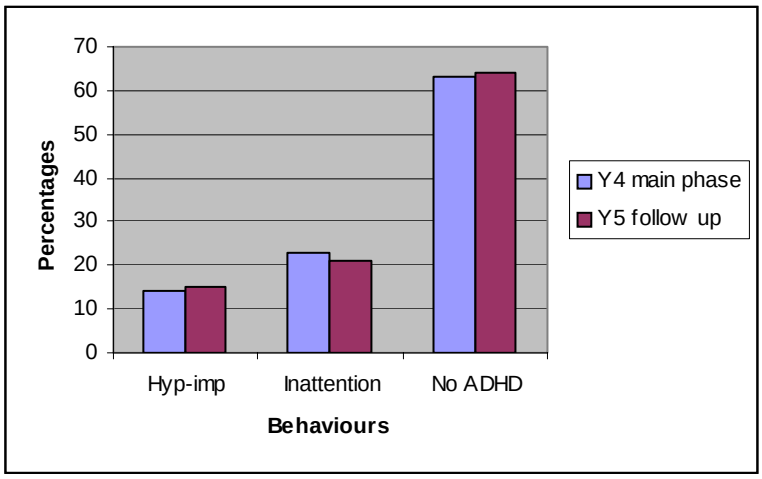
(Insert Table 12f here)

ii) Variability over time

Tables **12e** and **12f** provide details of observation recordings over both research phases. Freddy's transition from Y4 to Y5 involved a change from a first school to a large middle school, where the delivery of the curriculum placed more emphasis on self-organisation and autonomy (British Psychological Society, 2000a).

Fixed Interval Sampling (FIS)

Figure 12.3. FIS recordings over time (all settings) – Freddy

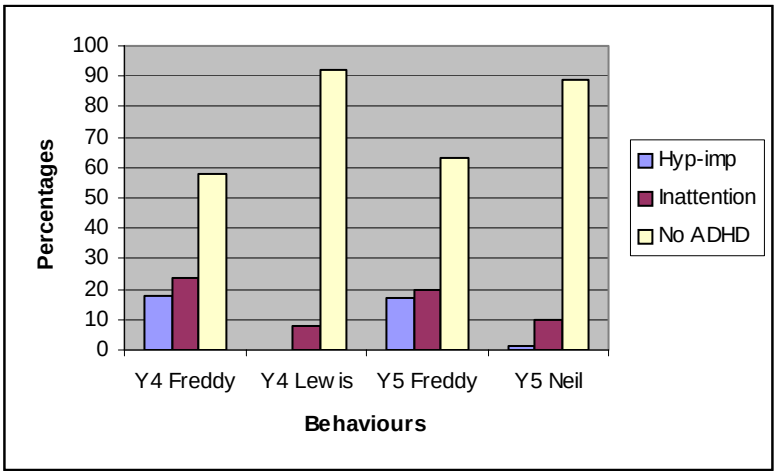


The percentages shown in Figure **12.3** show the breakdown of the total recordings for FIS observations, which were very similar for both years (see Table **12e**). Across all settings in the main research phase in Y4, 14% 'hyperactive-impulsive' (hyp-imp) behaviours were recorded for Freddy. This increased slightly to 15% in the follow up phase in Y5. 'Inattention' behaviours decreased from 23% to 21%, and 'No ADHD' behaviours increased marginally from 63% to 64%.

Instantaneous Time Sampling (ITS)

A different non-ADHD pupil was used as a comparison in the follow up phase in Y5, but a similar pattern to the one in the FIS findings above can be discerned in the overall ITS recordings shown in Figure **12.4**, which were taken from Table **12f**. The percentages of 'hyperactive-impulsive' behaviours recorded for Freddy were 18% in the main phase and 17% the following year. 'Inattention' behaviours decreased from 24% to 20%, and 'No ADHD' behaviours increased from 58% to 63%. The comparison pupil in Y4 achieved 92% 'No ADHD' behaviours, and the Y5 comparison achieved 89%.

Figure 12.4. ITS recordings over time (all settings) – Freddy and comparisons



12.4.3 Associated difficulties

Self-esteem

It is difficult to draw any conclusions regarding Freddy's levels of self-esteem, as there appears to be variation in his questionnaire scores over time. Freddy's move from first school to middle school meant that self-esteem questionnaires were administered to different cohorts in the main and follow up phases. His score of 14/24 in the main phase was below the class average of 16. The following year his score decreased to 10/24, again below the class average of 18.

Social relationships

Freddy had difficulty playing appropriately with his peers and often became aggressive towards others. One informal playtime observation records:

> *"10:27 Freddy was running, chasing, 'play fighting' with several boys… Puts his arm round boy's neck, pulling him along. T intervenes.*
> *10:29 'Strangling' a boy … another boy intervenes, F 'strangles' him instead"* Extract from field notes, 21st May 2003.

In Y5 there were particular problems as his brother was in Y6 and they were often involved in fighting each other. Although informal playground observations found that he played in football games most lunch times, he tended to dominate these, telling the others what to do. No one chose him as a playmate in the sociometric question included on the self-esteem questionnaire. The field notes include references to peer rejection, for example children not wanting to sit next to him on the carpet in lessons.

Concept of time, organisational skills

Freddy was often unsure of the weekly timetable. There was a written reminder of the day's lessons on the blackboard each day, but Freddy's reading skills were poor. On 20th May 2004 he was heard to ask a classmate *"What lesson is next?"* There are numerous references in the field notes to his not having the correct equipment with him, for example his PE kit or pencil case (***difficulty in organising/ losing things necessary for tasks and activities***).

Immaturity

In Y4 Freddy seemed to experience difficulty in changing from the emotionally supportive environment of the nurture group to the main class group. In both Y4 and Y5 he was observed to be almost constantly sucking his thumb or chewing things, including his sweatshirt cuffs, plastic water bottle, pencil case, pens and pencils. On one or two occasions he brought small toys into school. The FIS extract above (**vi**) refers to his bringing in a small toy motorbike on 10th July 2003 and on 10th June 2004 he kept getting a small plastic 'alien egg' out of his pocket. He could be over-emotional at times and was observed to be crying when given his test results in a numeracy lesson on 14th May 2004. During an RE lesson on 5th May 2004 Freddy had accidentally hit his TA on the nose with a pencil case as he spoke to her. Following this,

> *"14:54 Freddy hugs her (TA). She speaks to him about personal space and keeping his hands to himself. He says 'sorry'"* Extract from field notes, 5th May 2004.

References to death, dying

During the literacy lesson on 20th May 2004 the teacher had read a story about a boy living in Bosnia. *"Freddy shouted: "I want everyone to die …and myself"* (extract from field notes, 20th May 2004). During the RE lesson detailed above in ITS extract (**xi**) on 26 May 2004 he made several references to the war, death and getting blown up. His TA later voiced her concerns to the researcher about his constant references to death:

> *"10:54 TA explains that earlier he had said 'I wish I was dead'…. TA had asked him 'How's your Mom?' to which he replied 'She's dead, lying in a pool of blood on the floor'"* Extract from field notes, 10th June 2004.

12.5 Summary

Identification and assessment

At least ten professionals from three agencies were involved in meeting Freddy's needs up to the end of his time in Y5 in addition to teaching staff (BPS, 2000a; DfES, 2003; 2004a) (see Table **14b**). Every effort was made by both schools 5 and 8 to prevent his exclusion and to keep him in mainstream education.

Variability in ADHD symptoms across contexts and over time

Freddy displayed a higher proportion of ADHD behaviours:

- when there were changes to routine, including different teachers;
- in the Y4 numeracy group where he did not receive enough individual support;
- in less structured lessons such as music in Y5.

Fewer ADHD behaviours were observed:

- in the nurture group in school 5 where there was a good adult:pupil ratio and plenty of support and encouragement;
- when working on the computer or watching a video;
- when engaged in creative activities; and
- in a novelty situation.

There was evidence of only slight variability in ADHD symptoms displayed by Freddy over time. He achieved lower scores than the comparison pupils for 'No ADHD' behaviours in both years.

Chapter 13

Case study 6: Adam

13.1 School setting

This community primary school was situated on the outer edge of a city in a residential area that is socio-economically above average (OFSTED, 2002). During the two academic years 2002/2003 and 2003/2004 there were approximately 400 pupils on roll, with 14 mixed ability classes from Reception to Y6 in a two-form entry. The percentage of pupils on roll eligible for free school meals was well below the national average and was the lowest amongst the eight schools involved in **Part 2** of the research. Numbers of pupils with SEN were also below average. There were no pupils in the school with a completed formal ADHD diagnosis in 2003. KS2 national test results achieved in the school in 2004 were above the national average in English, mathematics and science. Attendance was above the national average.

13.2 Classroom setting

Each KS2 class has one teacher in overall charge, although the year groups are split into ability sets for literacy and numeracy. The main phase of the case study was undertaken in a mixed-ability Y3 class of 30 in the summer term 2002/2003. This figure is higher than the national average KS2 class size (DfES, 2004b). The original intention, as with all case studies, was to undertake the follow up phase with the same cohort during the corresponding term the following year. However, this was not possible in Adam's case. The SENCO contacted the researcher on 15th October 2003 with the information that Adam and his family were going to live abroad, probably at Christmas or early in 2004. She also reported that Adam had been diagnosed with ADHD and had been prescribed Ritalin. Arrangements were made for the researcher to carry out as many observations as possible during the autumn term 2003 before Adam left.

In both Y3 and Y4 Adam was included in small SEN withdrawal groups for literacy and numeracy lessons, where he worked with a TA in a separate classroom. In Y3 the literacy group consisted of seven pupils, with nine in the numeracy group. In Y4 there were six for literacy and eight for numeracy.

13.3 Adam

Adam's mother had recently remarried and he lived with his mother, stepfather, stepbrother (the same age as himself) and baby sister. He had regular contact with his father. Adam's stepbrother, who was in the parallel class in Y3 and Y4, was of above average ability and Adam's stepfather constantly made comparisons regarding their academic progress. He expressed his concern to the school and more support was sought, finally resulting in Adam's diagnosis of ADHD. His mother had previously been reluctant to acknowledge that there was a possibility of ADHD and had initially been opposed to the idea of medication.

Adam was aged 8 years 3 months at the beginning of the case study. He was extremely keen on football and enjoyed using a computer. During the second year of the case study he started to attend boxing lessons. In non-statutory assessment tests at the end of Y3, he was below level 2 in both reading and writing and below level 2b in mathematics.

George (non-ADHD comparison)

George was the same age as Adam and lived with his parents and younger brother and sister. An 18 year-old brother lived away from home. He was in the main class group for literacy and numeracy and achieved level 3b in reading, 3c in writing and 4c in mathematics in the end of Y3 tests.

13.4 Findings

13.4.1 Identification and assessment process

Table **13a** provides a summary of the identification and assessment processes for SEN and ADHD undertaken throughout Adam's time in primary school.

Table 13a. Identification and assessment process – Adam (highlighting agencies involved)

Date	(Page 1 of 2)	
	Prior to research period	
	SEN Code of Practice	**ADHD diagnosis**
Sep 1999	**Reception**	
Feb 2000	**Stage 2 Individual Education Plan (IEP)** *"It was decided to go directly to stage 2 as he is clearly causing sufficient concern for SENCO and parental involvement"* **Target areas**: inattention, impulsiveness, anti-social behaviours.	Observation in classroom and playground *"shows many of the characteristics of ADHD"*.
Jun 2000	**IEP review** Behaviour improved. Problems now over lack of academic progress	
Sep 2000	**Year 1**	
Nov 2000	**IEP** Behaviour again a cause for concern *" … He is hyperactive and impulsive, cannot concentrate and has a poor short term memory. Academic capabilities are difficult to assess because of poor concentration and unwillingness to co-operate."* **Target areas**: develop strategies to modify behaviour, work on basic literacy and numeracy skills.	Displays many of the characteristics of ADHD.
Jan 2001	**IEP review** *"his needs dominate the class & take up a disproportionate amount of teacher time"* **Proceed to Stage 3**.	
Jun 2001	**Learning Behaviour and Support Service (LBSS) (Behaviour)** observation carried out Offers advice – classroom strategies including use of 'doodle pad' Internal request **LBSS (Learning)**.	
	Pilot case study period	
Sep 2001	**Year 2** (class teacher is KS1 SENCO)	
Oct 2001	**LBSS (Learning) assessment** Suggestions include: speaking & listening, instruction following, sequencing & processing information. Suggestions for IEP.	
Dec 2001	**Stage 3 IEP** Main area of concern: basic literacy skills. Referral to **Speech and Language Therapy (SALT) Service.**	
Jan 2002	**SALT initial report** mentions *"**slight** delay"*. Review in July.	
July 2002	**IEP review** includes: Work has been done in class using resources from **SALT** (review postponed due to staff changes).	
	Case study period	
Sep 2002	**Year 3** **IEP (School Action Plus)** • Continues to find it difficult when listening to instructions and can be easily distracted • Await **SALT** report.	
Oct 2002	**Educational Psychologist** School visit summary – classroom observations, teacher interview. Interview with parents - suggests behaviour management strategies.	Teacher asked to complete Achenbach report. Will discuss with parents involving community paediatrician to consider ADHD assessment.
Dec 2002	**IEP** report: • Weaknesses include social comprehension/ commonsense understanding • Difficulty listening and following instructions • More able to engage & sustain attention in tasks involving concrete objects, patterns, pictures. Concerns re attentional/hyperactivity-impulsivity features.	

Date	(Page 2 of 2) Case study period (continued) SEN Code of Practice	ADHD diagnosis
Jan 2003	**IEP** includes: • Finds it difficult to complete work independently • Still awaiting **SALT** report. Areas of concern include: • Behaviour (impulsivity, distractibility) • Following through instructions.	
Mar 2003		Referred via **school nurse** to **community paediatrician** for assessment for ADHD.
May 2003	**SALT** report: • Pattern of delay in both use and understanding of language • Difficulties with receptive language, short term auditory memory and attention	
	IEP SALT review later in term SATs results all below level 2.	Await referral for ADHD.
Jun 2003	Letter from **community paediatrician** to **SENCO** • Report on visit from Adam and parents – see next column • School to complete Conners questionnaire • To see him again on receipt of completed forms.	*"… likely that he has problems on the ADHD spectrum"* Conners questionnaire to be completed by school.
Jul 2003	**SALT report** • Adam found it difficult to pay attention, so only addressed understanding of language • Comprehension of language skills has improved relatively little since March 2002 • Mum explains ADHD diagnosis • Suggestions for possible teaching strategies enclosed.	
Jul 2003	**End of year school report** includes: • Finds it difficult to concentrate • Finds mathematical concepts difficult to understand • Difficulty organising tasks, persevering • Becomes disheartened, gives up.	
Sep 2003	**Year 4**	Letter from **community paediatrician** - ADHD diagnosed. Ritalin at school only
Oct 2003	**IEP** • Since starting taking Ritalin has been quieter and less impulsive in school. • Ability to concentrate & remain on task varies, but on the whole is improving • When reminded is able to wait his turn to answer questions.	
Following case study period		
Jan 2004	More improvements reported following medication. Adam moves with his family to live abroad. He attends a Spanish school – in a year below his chronological age group. Stepbrother (same age) in correct year group.	

13.4.2 Variability in ADHD symptoms

i) Variability across curricular contexts

Fixed Interval Sampling

The extracts shown in Tables **13b** and **13c** have been taken from extended FIS analysis summaries (see Appendices **13.1** and **13.2**). Table **13b** highlights selected lessons where Adam achieved high percentages for 'No ADHD' behaviours and correspondingly low figures for ADHD behaviours.

Table 13b. Extracts from Fixed Interval Sampling Analysis (a)

Date, time, duration of recording period	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inatt	H/I
(i) Year 3 Thu 17 July 03 14:28 – 35 mins	140	**RE** – Story of 'Pharoah and the Plagues of Egypt' – class complete individual worksheets	65%	24%	11%
(ii) Year 4 Wed 10 Dec 03 09:42 – 50 mins	200	**Numeracy** – group, n = 8. Mental maths, bingo (2X table), test, tally charts for display	84%	14%	2%
(iii) Wed 10 Dec 03 10:53 – 63 mins	252	**Literacy** – group, n = 7. Reading, spelling, fill in missing words, adjectives written work	89%	9%	2%

(**i**) In the RE lesson on 17th July 2003 Adam achieved 65%, his highest recording of 'No ADHD' behaviours in a Y3 class lesson. Adam was often ***fidgeting*** and fiddling with his pencil case, particularly at the beginning of the lesson when the teacher was going over the story. The 24% 'inattention' behaviours included many recordings of his ***difficulty sustaining attention,*** being ***easily distracted by extraneous stimuli*** and on one or two occasions, ***difficulty in following through instructions.*** The teacher was aware that as this lesson followed a 'wet playtime' Adam might have difficulty in concentrating. She offered him plenty of individual support and encouragement in completing the worksheet, breaking it down into manageable chunks for him.

> *"14:35 Adam says he needs help. T asks him to take his sheet over to her. Tells him what to put in the first two boxes…"*
>
> *"14:47Adam to T: 'What's that?'… 'Death of the eldest'… 'What does that mean?' …T explains it to Adam. She goes over and sits with him"*
>
> *"14:52 Adam: 'I don't get this'… T goes over again. 'Cross out every other letter in the code – I'll tell you what to do next' "* Extracts from field notes, 17th July 2003.

(**ii**) On 10th December 2003, during the (shortened) follow up case study, Adam's 84% 'No ADHD' behaviours was his highest overall for a group numeracy lesson. He enjoyed the 'Bingo' game involving the use of the two times table. The TA later wrote seven maths problems on the board for the group to answer in their maths books under test conditions. Anyone with all seven correct would earn a sweet. Adam did his best, but unfortunately his language difficulties hindered him:

> *"09:56 Adam to TA: 'I can't do number 6…Don't know what* ***rounded*** *means. Can you tell me what it is?'*
> *TA: 'No, because this is a test. I'll tell you afterwards. Miss that one out…go on to the next one'.*
> *(Note: not happy because he wanted to get them all right to get a sweet)"*
> Extract from field notes, 10th December 2003.

Even though he was disappointed it was noticeable that he managed to control himself and to concentrate for the majority of the lesson. The 14% 'inattention' behaviours were mainly for ***difficulty sustaining attention,*** with one or two recordings of being ***easily distracted by extraneous stimuli*** and ***difficulty in following through instructions.*** A noticeable feature in the lesson was the low figure of 2% hyperactive-impulsive behaviours, mostly for ***fidgeting*** and one occasion when he ***blurted out an answer***.

(**iii**) Also on 10th December 2003, Adam achieved his highest recording overall of 89% for 'No ADHD' behaviours during the group literacy lesson. The low 9% 'inattention' figure included several recordings of ***difficulty sustaining attention*** and one or two ***difficulty in following through instructions***. Several changes were observed in his behaviour since the main phase study:

> *"11:05 Gets on with quiet reading whilst TA hears others read individually"*
>
> *"11:16 Adam writes 'dream' correctly on board. Also pays attention when others have a turn…(Note - this is new behaviour)"*
>
> *"11:48 Waits patiently with hand up to offer suggestions – hardly any calling out now… (Again, new behaviour)"* Extracts from field notes, 10th December 2003.

Table **13c** focuses on settings where high percentages were recorded for ADHD behaviours, with correspondingly low 'No ADHD' figures.

Table 13c. Extracts from Fixed Interval Sampling Analysis (b)

Date, time, duration of recording period	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inatt	H/I
(iv) Year 3 **Wed 25 Jun 03** 09:08 – 22 mins	88	**KS2 assembly** – DHT, in hall. Hymn, story, prayer, announcements	20%	63%	17%
(v) **Mon 7 Jul 03** 13:06 – 55 mins	220	**History** – class, different T. 'Roman houses' – oral, worksheet	28%	43%	29%

(**iv**) Adam found difficulty in paying attention when in the school hall with the whole school or KS2. On 25th June 2003 his lowest figure overall of 20% for 'No ADHD' behaviours was recorded. His highest recording of 63% for 'inattention' behaviours was made up mainly of his being ***easily distracted by extraneous stimuli*** and having ***difficulty sustaining attention.*** At the start of the KS2 assembly he was unable to read the words of the hymn from his hymnbook and was only able to join in odd words of the chorus. Later, sitting on the floor, he was on the extreme end of a row, not in the direct eye line of the deputy headteacher (DHT) who took the assembly. Adam discovered a small insect on the floor and spent virtually all of the assembly in watching it, looking for more by ***fidgeting,*** reaching to his side and then out in front of him, nudging his neighbours and whispering to them. Towards the end a pupil went to the front of the hall to show some medals he had won for judo and Adam briefly focused on him.

(v) On 7th July 2003 Adam displayed a high proportion of ADHD behaviours throughout the day in all lessons (see also **'ix'** below and later note in section **13.4.3** referring to food additives). The following factors are recorded in the field notes, some of which undoubtedly contributed to Adam's difficulties:

- It was a Monday, the day after the School Fayre. Adam's behaviour was often affected by events which happened at weekends, for example when he stayed with his father.
- It was towards the end of the school term and school year.
- The class had had three different teachers during the day – changes to routine.
- Adam had lost the majority of his playtimes throughout the day.

The history lesson was taken by another KS2 teacher in the class teacher's absence. Adam achieved only 28% 'No ADHD' behaviours on occasions when the teacher worked hard to bring him back on task, offering one-to-one support and encouragement. This was the lowest figure recorded in the main classroom setting. He displayed 29%

'hyperactive-impulsive' behaviours (the highest number recorded overall in a classroom setting). These included ***fidgeting, talking excessively, unauthorised movement in the classroom*** and ***interrupting others***. The 43% 'inattentive' behaviours were for ***difficulty sustaining attention*** and being ***easily distracted by extraneous stimuli***.

Instantaneous Time Sampling

The extracts shown in Table **13d** are taken from extended analysis summaries (see Appendix tables **13.3** and **13.4**).

Table 13d. Extracts from Instantaneous Time Sampling Analysis

Date, time at which 10-minute recording period began, (recordings made at 30-second intervals), part of lesson	Lesson	Recordings out of 20					
		Target pupil Adam			Comparison George		
		0	Inatt	H/I	0	Inatt	H/I
(vi) Year 3							
Tue 6 May 03	**PE – class in school hall**						
13:08 – Start	Warm up, use skipping ropes	15	3	2	20	0	0
13:22 – Middle	Small ball skills	15	4	1	20	0	0
13:40 – End	Bat and ball skills	13	6	1	19	1	0
(vii) Thu 8 May 03	**Art** – class, at tables, seed collage						
13:07 – Start	Teacher intro – design picture	12	5	3	18	2	0
13:21 – Middle	Collage, stick on seeds	16	4	0	19	1	0
13:36 – End	As above	12	5	3	19	1	0
(viii) Wed 4 Jun 03	**ICT** - class, in ICT room with T						
10:02 – Start }	{Letter from 'Roman soldier' to	15	4	1	19	1	0
10:12 – Middle }	{mother – copy from handwritten	11	2	7	16	4	0
10:22 – End }	{draft	8	7	5	16	4	0
(ix) Mon 7 July 03	**Dance practice** – class in hall						
14:40 – Start	Rehearse theatre performance ***(Adam is asked to sit on the side and take no further part)***	1	5	14	16	4	0
(x) Year 4							
Wed 12 Nov 03	**History** – 'Anglo-Saxons'						
14:25 – Start	Teacher recap in classroom	8	8	4	17	3	0
14:41 – Middle	'Archaeology dig' outside	16	4	0	18	2	0
15:00 – End	Finish dig, then in classroom	8	9	3	14	5	1

(**vi**) During the PE lesson in the school hall on 6th May 2003, Adam scored 15,15 and 13/20 'No ADHD behaviours' when practising bat and ball skills on his own and with a partner, comparing favourably with George's 20, 20 and19/20. He enjoyed this type of lesson, which gave him the opportunity to run around. The recordings for 'inattention' included several when Adam had ***difficulty following through instructions***, often when he had ***not listened*** to the teacher or had ***difficulty sustaining attention***. For example,

> *"13:38 T explaining what to do. Adam doesn't seem to be listening to instructions…*
> *13:41 Bounces ball instead of throwing it to partner…*
> *13:42 Another T demonstration – bounce the ball this time…Adam bounces it too hard…"* Extracts from field notes, 6th May 2003.

(**vii**) Adam enjoyed creative activities and usually managed to maintain his concentration. At the beginning of the art lesson on 8th May 2003 he scored 12/20 'No ADHD' behaviours when listening to the teacher's introduction to the designing and making of a seed collage, compared with George's 18/20. Most of the recordings for ADHD behaviour were at the beginning of the lesson before Adam had settled down and referred mainly to his ***difficulty sustaining attention***, and being ***easily distracted by extraneous stimuli.*** At one stage, George, who was sitting next to Adam, offered him some help:

> *"13:12 Adam shows George the picture outline he has drawn.*
> *George to Adam: 'You need it bigger than that'. Adam rubs out it out…*
> *(Note - example of peer support?)"* Extract from field notes, 8th May 2003.

Later the teacher gave Adam some individual support. In the middle of the lesson, when actually engaged in the practical task of sticking on seeds he scored his highest 'No ADHD' behaviours recording of 16/20, comparing more favourably with George's 19/20. Towards the end of the lesson he started to lose interest again, and was reluctant to tidy up when instructed to do so by the teacher. This led to 12/20 for 'No ADHD' and recordings for ***not listening, difficulty in following through instructions*** and ***fidgeting.*** George again scored 19/20.

(**viii**) Adam enjoyed playing games on the computer but was not so enthusiastic when required to use it as a word processing tool. In the ICT lesson on 4th June 2003 each pupil was required to type out a letter written as if from a Roman soldier to his mother. They had all previously handwritten a draft and in this lesson they simply had to copy it out on individual computers in the ICT room. The novelty of going to the ICT room and using a computer may have ensured Adam's early focus and recording of 15/20 'No ADHD' behaviours at the start of the lesson, comparing favourably with George's 19. As the lesson went on it was clear that he did not enjoy simply typing out his draft letter. He typed very slowly and did not appear as familiar with the layout of the keyboard as did many of his classmates. In the middle observation period he only achieved 11/20 'No ADHD' behaviours, compared to George's 16, despite the teacher

offering him support when possible. The 'hyperactive-impulsive' recordings were for ***fidgeting*** and ***talking excessively*** to another boy. Towards the end of the lesson Adam's score for 'No ADHD' behaviours fell to 8 while George maintained 16/20. Part of an interview with the class teacher following this lesson is shown below.

> *"T says that she finds it extremely difficult to oversee a class of 30 in the ICT room on her own. She tries to help the 'strugglers', but some of the more able can be lazy and therefore do not always work as well as they could"* Extract from field notes, 4th June 2003, during playtime.

(**ix**) Although Adam enjoyed PE and outdoor games lessons, he was not so keen on dance lessons. On 7th July 2003 he was so hyperactive during a dance practice in the school hall that the teacher had no choice but to make him sit out on the sidelines. Only one ten-minute observation period was possible during which his lowest overall score for 'No ADHD' behaviours of 1/20 was recorded, compared with George's 16. Adam displayed 14/20 hyperactive/impulsive behaviours (his highest overall). Ranging from rolling around on the floor to climbing the wall bars (***climbing excessively in situations where it is inappropriate***), the teacher considered his behaviour to be dangerous to himself and the to rest of the class.

(**x**) The extract from the Y4 history lesson on 12th November 2003 illustrates the effect a novel activity can sometimes have on a pupil with ADHD. For the first observation period in the classroom, the teacher recapped previous work on the Anglo-Saxons, archaeology and artefacts. Adam had ***difficulty sustaining attention***, was ***easily distracted by extraneous stimuli***, ***fidgeted*** and ***blurted out answers***. This meant he only achieved 8/20 'No ADHD' behaviours, compared to George's 17. The teacher then divided the class up into groups of four, taking care to group Adam with three good role models, for the next part of the lesson. This 'archaeological dig' took place outside in the school grounds. The teacher had previously buried pieces of broken pottery and the children had to dig them up. Adam was observed to be working co-operatively with his group, scoring 16/20, his highest recording for 'No ADHD' behaviours overall, comparing favourably with George's 18. The final observation period began outside at the end of the 'dig' and ended back in the classroom. While the class were collecting up equipment Adam was ***easily distracted*** by an ambulance which went past the school grounds. In the classroom when the teacher was explaining what they would do the following day with the pieces of pottery Adam had ***difficulty sustaining attention*** and ***fidgeted***, scoring only 8/20 for 'No ADHD' behaviours.

(Insert Table 13e here)

(Insert Table 13f here)

ii) Variability over time

Tables **13e** and **13f** provide details of observation recordings over both research phases. As a full follow up phase study was not possible in this case, it was more difficult to draw conclusions regarding changes in the transition from Y3 to Y4. It was obvious in the main phase that the TA who took Adam's group for literacy and numeracy had developed a particularly good relationship with Adam by the time the study was undertaken in the summer term towards the end of his time in Y3. The observations in Y4 were of necessity carried out in the autumn term 2003 (see previous notes) and there had been less time for a similar relationship to develop with the Y4 TA. Adam had been diagnosed with ADHD and prescribed Ritalin at the beginning of Y4. The comparisons made of variability over time are therefore not only between his recorded behaviours in Y3 and Y4, but also between those before and after starting to take medication.

Fixed Interval Sampling (FIS)

Figure 13.1. FIS recordings over time (all settings) – Adam

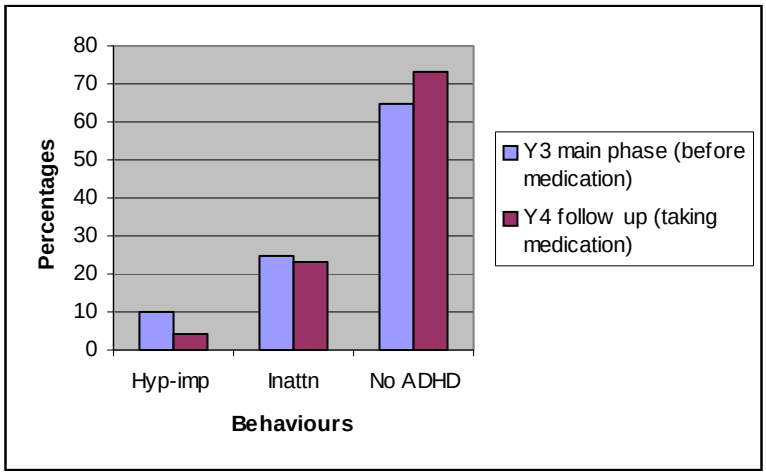


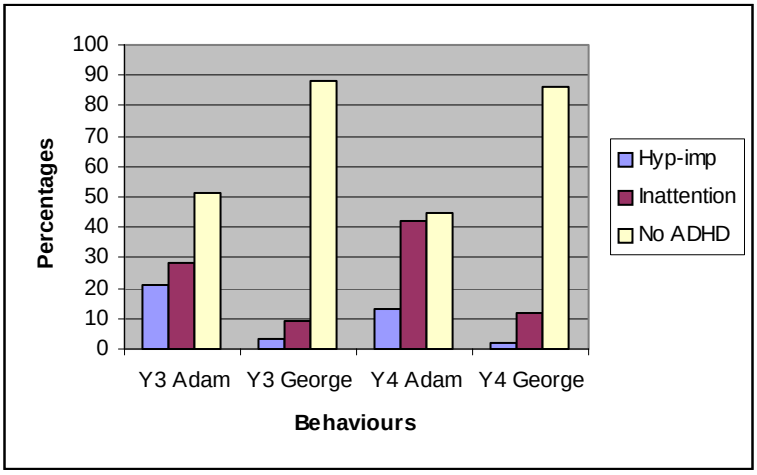
Figure **13.1** shows that, across all FIS observations, the proportion of a lesson Adam spent displaying 'hyperactive-impulsive' (hyp-imp) behaviours decreased significantly from 10% in Y3 to 4% in Y4. Recordings for 'inattention' fell from 25% to 23% and 'No ADHD' behaviours increased from 65% in the main phase to 73% in the follow-up phase. (These figures were taken from Table **13e**).

Instantaneous Time Sampling (ITS)

Differences between Y3 and Y4 ITS recordings are not so apparent as those in the FIS figures detailed above. This may be due partly to the incomplete follow up study and also to the nature of each type of observation (see Chapter **5** for details). It can be seen from the details in Figure **13.2** (taken from Table **13f**) that Adam's recorded

hyperactive-impulsive behaviours decreased from 21% to 13%. 'Inattention' recordings increased from 28% to 42% and 'No ADHD' recordings decreased slightly from 51% to 45%. George achieved 88% 'No ADHD' behaviour recordings in the main phase and 86% the following year.

Figure 13.2. ITS recordings over time – Adam and George (comparison)



13.4.3 Associated difficulties

Self-esteem

Adam's level of self-esteem appeared to increase over time, but as a full follow up study was not possible, extra caution needs to be exercised when drawing any conclusions. During the main phase he scored 12/24 on the self-esteem questionnaire which was the third lowest score in the class and well below the class average of 18. His score of 17 was recorded during the short follow up study when it was not possible to obtain the scores of his classmates for purposes of comparison.

Social relationships

Adam had poor social skills and found it difficult to make friends:

> *"When observed at play he was a boisterous, aggressive footballer and although appearing initially to be playing alongside his peers he was in fact a solitary player not really interested in social interaction but preferring to dominate the game"* (Extract from LBSS assessment teaching summary dated 19th December 2001).

Concept of time

Adam had problems with time management and the general concept of time (Cooper and Bilton, 2002; Houghton, 2004a). He was often unsure what day of the week it was or which lesson came next.

Language (processing) difficulties

There were many examples of Adam's difficulties with language for which he received some Speech and Language Therapy (SALT) support. During a phonics programme in a literacy lesson in Y3, the pupils in the group were asked to suggest words with particular endings.

> *"11:07 (TA asks for words ending in '…ate'). Adam calls out: 'shrate? …splate? …brate?'*
> *11:13 (TA: 'How about '…ide' words?') Adam suggests 'dide' (TA explains that it is spelt differently), then tries 'gride? …skide?'"* Extracts from field notes, 17th June 2003.

Possible effect of food additives

The class teacher spoke to Adam's mother at the end of the day on 7th July 2003, saying that he had been very 'high' all day. His mother said that he had been like it at home as well, and suggested that possible E numbers in the hay fever remedy he had been taking might have affected him (!) The teacher suggested taking him to the doctor for an alternative remedy.

Emotional impulsiveness

Adam was observed to cry and to get upset more easily than his peers. For example,

> *"11:35 Sulking – did not get all sums right, and so doesn't get a sweet. Starts crying"* Extract from field notes during numeracy lesson, 4th June 2003.

Physical impulsiveness

> *"Recently Adam ran across the car park chasing the football out towards the main road. Luckily a workman retrieved the ball for him. Adam's Mom has been informed of the school's concerns. Instead of making him lose playtimes, he has been banned from playing football, but is still allowed out to play. This means he can still run around and play on the adventure playground to use up some energy"* (Interview with SENCO, 25th June 2003).

13.5 Summary

Identification and assessment

There is evidence of a multi-disciplinary approach both in the SEN Code of Practice process (DfES, 2001a) and in Adam's eventual diagnosis and treatment of ADHD. In addition to teaching staff, another 7 professionals from three agencies were involved in meeting Adam's needs over five years (BPS, 2000a; DfES, 2003; 2004a) (see Table **14b**).

Variability in ADHD symptoms across contexts and over time

Adam displayed a higher proportion of ADHD behaviours:

- in the school hall;
- in dance lessons;
- when he was kept in at playtime or on 'wet play' days;
- when there were changes to the routine; and
- before being formally diagnosed with ADHD and prescribed medication.

Fewer ADHD behaviours were observed when he:

- worked on the computer;
- was engaged in creative activities;
- was engaged in a 'novelty' situation – e.g. an 'archaeological dig';
- received individual support;
- was in a small group working on short, varied activities; and
- had a good relationship with the TA.

There was a decrease in ADHD behaviours and a correspondingly marked improvement in 'No ADHD' FIS figures in Y4 following medication being prescribed. Adam achieved lower ITS scores than the comparison pupil for 'No ADHD' behaviours in both years.

Chapter 14

Cross-case analyses of case study findings

14.1 Introduction

Chapters **8 – 13** have provided details of findings from the individual case studies undertaken in **Part 2** of the present research. This chapter will now offer in-depth analyses of data across the six cases studies undertaken in schools (Creswell, 1998). Where patterns of variability are identified, hypotheses (previously defined as 'suppositions that can be tested') meriting further study may be generated. These are in the following areas, some of which have also been addressed in **Part 1**: improving multi-professional identification, assessment and management procedures for ADHD (**14.2**); exploring contextual variables associated with ADHD symptoms, both across contexts and over time (**14.3**); and observing other learning difficulties associated with the National Curriculum and ADHD (**14.4**).

14.2 Multi-professional identification, assessment and management of ADHD

The heterogeneity of the individual schools, classrooms, teachers and pupils has previously been highlighted in Chapter **6** (see also Appendices **6.1** and **14.1**). All schools are required to

> *" fulfil their statutory duties towards children with special educational needs but it is up to them to decide how to do so in the light of the guidance in* (the) *Code of Practice"* (DfES, 2001a, p.iii).

An examination of the case study findings reveals variability in the approaches of schools in an LEA to the identification and assessment of SEN (including ADHD). In seven of the eight schools included in **Part 2** of the present research, the special educational needs co-ordinators (SENCOs) had a teaching commitment and were allowed varying amounts of non-contact time for SEN duties. The extent to which class teachers were involved in writing and reviewing Individual Education Plans (IEPs) also varied between schools.

All target pupils had been placed on one of the SEN Code of Practice stages early on in their school careers (DfE, 1994; DfES, 2001a). Table **14a** details the time scales involved in the identification and assessment of SEN in each case and the formal diagnosis of ADHD in four cases. At the start of each case study all six pupils had reached at least the 'School Action Plus' stage where external agencies had become

involved in addressing their needs. A Statement of SEN had been issued in case 5 to support Freddy's complex range of learning difficulties and challenging behaviours. Carl (case 2) had been issued with a Statement in Y6, focusing on his learning difficulties. Statements of SEN had not been issued for any pupil specifically for ADHD.

Table 14a. Time scales – variability in identification and assessment processes in six case studies

	Pre-school, nursery	Reception	Y1	Y2	Y3	Y4	Y5	Y6
Case 1 Ben			SEN Code of Practice Stage 1	SEN Code of Practice 'School Action'	SEN Code of Practice 'School Action Plus'			
Case 2 Carl		SEN Code of Practice Stage 1	SEN Code of Practice Stage 2	SEN Code of Practice Stage 3		SEN Code of Practice 'School Action Plus'	Monitoring statement of SEN issued	Statement of SEN issued
				ADHD diagnosed - Ritalin prescribed				
Case 3 David	SEN Code of Practice Stage 1		SEN Code of Practice Stage 2	SEN Code of Practice Stage 3/ 'School Action Plus'				
	ADHD diagnosed - Ritalin prescribed							
Case 4 Edward		SEN Code of Practice Stage 1/2	SEN Code of Practice 'School Action Plus'					
	ADHD diagnosed		Ritalin prescribed					
Case 5 Freddy	No records available prior to Y2			SEN Code of Practice 'School Action Plus'		Statement of SEN issued		
Case 6 Adam		SEN Code of Practice Stage 2	SEN Code of Practice Stage 3		SEN Code of Practice 'School Action Plus'			
						ADHD diagnosed - Ritalin prescribed		

- Special Educational Needs (SEN) stages 1,2, and 3 (DfE, 1994). 'School Action' and 'School Action Plus' (DfES, 2001a).
- Further information regarding identification and assessment procedure is included in individual case studies.
- For details and numbers of professionals involved in the above, see Table **14b**.

Table 14b. Summary of agencies/professionals involved in identification and assessment processes for six case study pupils (SEN Code of Practice procedure and ADHD diagnosis)

Agency	Professional	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Number of involvements
School	Special Educational Needs Co-ordinator	✓	✓	✓	✓	✓	✓	**6**
	Teaching Assistant – support in school	✓	✓		✓	✓		**4**
	Special Support Assistant – individual support in school		✓			✓		**2**
	Learning Support Base – part funded by LEA* (based at school 3)			✓				**1**
	Nurture group			✓		✓		**2**
Local Education Authority (LEA)*	Educational Psychology Service		✓	✓	✓	✓	✓	**5**
	Educational Welfare Officer			✓				**1**
	Learning and Behaviour Support Service	✓	✓	✓	✓	✓	✓	**6**
	Pupil Referral Unit					✓		**1**
	Specific Learning Difficulties Centre (at school 2)		✓					**1**
	Statementing Officer		✓			✓		**2**
Specialist Children's Services (Health Services)	Clinical psychologist/consultant clinical psychologist		✓	✓				**2**
	Communication And Social Behaviour Assessment Team		✓					**1**
	Community paediatrician		✓			✓	✓	**3**
	Consultant child psychiatrist		✓	✓				**2**
	Consultant community paediatrician		✓					**1**
	Consultant paediatrician			✓	✓			**2**
	General Practitioner		✓				✓	**2**
	Paediatric Occupational Therapist		✓					**1**
	Physiotherapist		✓					**1**
	School doctor			✓				**1**
	School nurse	✓		✓			✓	**3**
	Speech and Language therapist		✓	✓	✓	✓	✓	**5**
Total number of professionals involved from three agencies		**4**	**16**	**12**	**6**	**10**	**7**	**55**

Table **14b** provides a summary of the agencies and professionals involved in meeting the needs of the target pupils in the six case studies. There is evidence of a multi-agency approach to the identification and assessment of SEN (DfES, 2001a, 2003, 2004a) and in the diagnosis and management of ADHD, described as a bio-psycho-social disorder (BPS, 2000a; Cooper and Bilton, 2002; DuPaul and Stoner, 2003; Kewley, 2005; Cooper, 2006). The numbers of professionals involved range from 4 in case 1 to 16 in case 2. It can be seen that, apart from teaching staff, the only two types of professional involved in all six cases were the special educational needs co-ordinators (SENCOs) in individual schools and members of the LEA's Learning Behaviour and Support Service (LBSS). Professionals from the Educational Psychology Service (LEA) and the Speech and Language Therapy Service (Health Service) supported five of the six pupils.

Carl (case 2) was the only target pupil to have attended a Specific Learning Difficulties Centre which was based at school 2. He was also the only pupil to have been referred to the Communication and Social Behaviour Assessment Team (CASBAT), a consultant community paediatrician, a paediatric occupational therapist and a physiotherapist. Two pupils attended nurture groups (David in school 3 and Freddy in school 5). School 3 was the only school to provide a Learning Support Base, and David (case 3) was the only pupil to benefit from attending such provision. He was also the only target pupil with poor school attendance figures which necessitated the involvement of an Educational Welfare Officer. Freddy was the only pupil to receive part of his educational provision in a Pupil Referral Unit (PRU).

The reported incidence of ADHD in the eight case study schools, extracted from the 2003 ADHD survey in **Part 1** of the present research, shows some variability (see Appendix **14.1**). Differences in the attitudes and awareness of schools and parents to the concept of ADHD may have contributed to variability in identification and assessment procedures. Schools 1, 5 and 6 reported no pupils with a formal diagnosis of ADHD. This was in spite of suggestions that "*on average, approximately one child in every class of 30 has AD/HD*" (Cooper and Bilton, 2002, p.22). School 1 adopted an inclusive policy and sought to support pupils without necessarily having recourse to 'labels'. When Ben was in Y1, the SENCO had suggested to his parents that he displayed many ADHD-type characteristics. Their reluctance to consider ADHD led to a delay in commencing the formal assessment process. The headteacher/SENCO of school 5 (Freddy's first school) stated: "*Our parents are not the sort that go for getting labels*

like ADHD for their children" (extract from field notes taken during interview, 28th April 2003). In case 6, Adam's parents had originally been opposed to the idea of assessment for ADHD and particularly the use of medication. This was to change during the course of the research period when his difficulties became more pronounced.

Four of the target pupils had received a formal diagnosis of ADHD by the end of the research period. In cases 2 and 6 the school had been directly involved in the initial referral for assessment. In cases 3 and 4 the initial referral came from health service professionals and the schools were informed by the parents of their child's ADHD diagnosis. All four boys had been prescribed methylphenidate. Edward (case 4) and Adam (case 6) remained on Ritalin, the immediate release formulation, whilst Carl (case 2) and David (case 3) had had their prescriptions changed to Concerta, the modified release formulation. In all cases, teaching staff reported positive changes including improved learning and behaviour and increased concentration. Systematic observations in case 6 confirmed an increase in recordings for 'No ADHD' behaviours following the commencement of medication.

There may be other reasons for differences between schools in the numbers of pupils with a diagnosis of ADHD. *"Access to child and adolescent mental health services is variable, with long waiting times in some areas"* (NICE, 2000, p.7). In school 2, which identified 8 pupils with ADHD in the 2003 survey, the SENCO reported to the researcher that *"several"* parents claimed disability allowance if their child had a diagnosis of ADHD (Steyn *et al.*, 2002).

Hypotheses - multi-professional identification, assessment and management of ADHD

- Differences in attitudes and awareness of schools and parents to the concept of ADHD may contribute to variability in identification and assessment procedures.
- Variability in multi-professional co-operation and access to child and adolescent mental health services may lead to differences between schools in the numbers of pupils with a diagnosis of ADHD.
- The majority of pupils who display ADHD characteristics appear to have their needs addressed, and, in varying degrees, met without a Statutory Assessment and Statement of SEN.

14.3 Variability in ADHD symptoms

As noted earlier, the validities of the ADHD symptoms have significant clinical support. If an instrument is valid, it must be reliable, according to conventional test theory. However, the test-retest reliability of the FIS and ITS instruments developed for use in a primary school classroom has not been empirically established. Great caution in interpreting changes in symptoms is essential.

The individual case studies detailed in Chapters **8 – 13** have included discussions of within-child variability in ADHD symptoms across settings and over time (Hinshaw, 1994; Kewley, 1999, 2005). The following sections now focus on variability in ADHD symptoms displayed across the six case study target pupils. As explained in Chapter **5** the term 'No ADHD' behaviour was used throughout the present research for recordings when there was no evidence of ADHD behaviours, rather than the term 'on task'. When analysing ITS findings there are also comparisons made with the behaviour of non-ADHD comparison pupils. Section **14.3.1** examines variability in ADHD symptoms across curricular contexts and in some cases over curricular contexts and time. Section **14.3.2** focuses on findings specifically relating to longitudinal variability across the main phase and the follow up phase.

14.3.1 Variability in ADHD symptoms across contexts

This section examines cross-case analysis data on particular curricular contexts where ADHD symptom variability has been observed. In some instances there are also variations over time. Although several examples also draw on qualitative data from field notes, the focus is predominantly on settings where recordings for 'No ADHD' behaviours using FIS and/or ITS observation techniques are numerically *above* or *below* the average recorded figures. This is in order to identify factors which may contribute towards producing more 'No ADHD' (or on-task) behaviour in pupils who display ADHD characteristics. As shown in the following section **14.3.2** in Table **14q** the average FIS 'No ADHD' percentage across the six cases was 66% in both the main and follow up phases. It can be seen from Table **14r** that the average ITS 'No ADHD' percentage across the six target pupils was 55% and the figure for the comparison pupils was 86% in both phases. The data in the tables presented below are taken from detailed summaries of cross-case analyses in Appendices **14.2** (FIS) and **14.3** (ITS). Brief details are also provided of additional classroom management strategies adopted in the case studies aimed at enhancing the on-task behaviour of pupils with ADHD.

Higher than average recordings for 'No ADHD' behaviours

In the following contexts numerically higher than average percentages for 'No ADHD' behaviour were recorded for the majority of target pupils using FIS and/or ITS observation techniques.

Creative activities

It can be seen from Tables **14c** and **14d** that there were only two exceptions when individual target pupils did not achieve 66% or more 'No ADHD' behaviours in FIS observation and three instances when 55% was not achieved using the ITS technique in creative activities.

Table 14c. Art/ DT lessons – FIS recordings for 'No ADHD' behaviours

		N (number) and percentage of total recordings for target pupil	
		Main phase	Follow up phase
Case 1	N %	 *	 *
Case 2	N %	55 76	124 88
Case 3	N %	104 74	178 86
Case 4	N %	158 72	198 50
Case 5	N %	287 74	844 67
Case 6	N %	90 56	 *
All 6 cases	N %	694 71	1344 67

*Timetabling precluded access to this curriculum area

Table 14d. Art/ DT lessons – ITS recordings for 'No ADHD' behaviours

		N (number) and percentage of total recordings			
		Target pupil		Comparison pupil	
		Main phase	Follow up phase	Main phase	Follow up phase
Case 1	N %	71 44	87 62	136 85	104 74
Case 2	N %	175 73	84 60	205 85	128 91
Case 3	N %	108 77	40 67	114 81	55 92
Case 4	N %	29 48	31 52	50 83	58 97
Case 5	N %	77 64	89 63	106 88	130 93
Case 6	N %	75 63	 *	111 93	 *
All 6 cases	N %	535 64	331 61	722 86	475 88

* Timetabling precluded access to this curriculum area

All six target pupils appeared to enjoy creative activities. These were usually whole class lessons taken by the teacher, often with very little TA support. *"Children with ADHD have been found to learn particularly effectively when engaged in concrete and kinaesthetic activities"* (Cooper, 2006, p.261). Lessons such as art, design and technology (DT) and practical science lessons offer opportunities for this type of approach to teaching and learning. Some researchers claim that pupils with ADHD may display more creativity than their peers (Alban-Metcalfe and Alban-Metcalfe, 2001; Cooper and Bilton, 2002). As Carl's DT lesson in case 2 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).

Information and Communication Technology (ICT)

Although there are several unavoidable gaps in the systematic observation data, Tables **14e** and **14f** show that the target pupils generally achieved higher than average or close to average FIS and ITS recordings for 'No ADHD' behaviour when working on a computer. On most occasions they worked on their own. With the exception of Adam (case 6, where a full follow up study was not possible), each of the target pupils was also observed working co-operatively with a peer on the computer. Carl (case 2) and David (case 3) were observed receiving peer support, mainly in reading instructions from the computer screen (see individual case study chapters).

Table 14e. ICT lessons – FIS recordings for 'No ADHD' behaviours

		N (number) and percentage of total recordings for target pupil	
		Main phase	**Follow up phase**
Case 1	N		226
	%	*	81
Case 2	N		123
	%	*	75
Case 3	N	78	134
	%	98	74
Case 4	N	111	255
	%	69	72
Case 5	N	74	130
	%	92	65
Case 6	N	87	
	%	41	*
All 6 cases	N	350	868
	%	66	74

* Timetabling precluded access to this curriculum area

Table 14f. ICT lessons – ITS recordings for 'No ADHD' behaviours

		N (number) and percentage of total recordings			
		Target pupil		Comparison pupil	
		Main phase	Follow up phase	Main phase	Follow up phase
Case 1	N		20		35
	%	*	50	*	87
Case 2	N		47		91
	%	*	47	*	91
Case 3	N				
	%	*	*	*	*
Case 4	N		35		37
	%	*	88	*	93
Case 5	N	30		36	
	%	75	*	90	*
Case 6	N	34		51	
	%	56	*	85	*
All 6 cases	N	64	102	87	163
	%	64	57	87	91

*Timetabling precluded access to this curriculum area

The individual case study chapters also include examples of the target pupils being able to sustain attention when watching a video or television programme. These findings are in line with previous research into pupils with ADHD who are able to focus when working on computers (Houghton, 2004b; Shaw, 2004; Shaw and Lewis, 2005; Shaw *et al.*, 2005) or when watching TV where they are offered "*immediate feedback coupled with stimulating presentation"* (Alban-Metcalfe and Alban-Metcalfe, 2001, p.60).

Literacy group lessons

All six target pupils were included in small ability groups for some or all literacy lessons. In cases 2 and 6 these groups were taken by teaching assistants, following planning with SENCOs, whilst the groups with higher attainments were taught by teachers (Macbeath *et al.*, 2006). Table **14g** shows that with the exception of case 5, higher than average FIS percentages were recorded for 'No ADHD' behaviours across the two years. There were no ITS observations as the comparison pupils were usually included in different ability groups for literacy and numeracy lessons.

Table 14g. Literacy (group) lessons – FIS recordings for 'No ADHD' behaviours

		N (number) and percentage of total recordings for target pupil	
		Main phase	**Follow up phase**
Case 1	N	1345	1047
	%	79	69
Case 2	N	1157	1537
	%	70	75
Case 3	N	311	317
	%	83	82
Case 4	N	130	90
	%	72	75
Case 5	N	1263	943
	%	64	64
Case 6	N	1452	741
	%	74	73
All 6 cases	N	5658	4675
	%	72	71

* Timetabling precluded access to this curriculum area

There were other examples of small group work where higher than average FIS 'No ADHD' figures were recorded. As described in individual case study chapters, two target pupils (David, case 3 and Freddy, case 5) attended nurture groups for part of the week during the main phase, with David also attending a learning support base twice a week for literacy lessons. David's recording for 'No ADHD' behaviour in these groups was 87%, with Freddy achieving 67% in the nurture group. Ben (case 1) was included in a group of four to six pupils for weekly sessions on speech and language and social skills and achieved 79% 'No ADHD' behaviour when observed on four occasions. Edward's observed 'No ADHD' behaviour in one Additional Literacy Support (ALS) lesson in a group of four pupils during the follow up phase was 75%.

Other contexts

Higher than average percentages for 'No ADHD' behaviour were often recorded when pupils were involved in novel situations. For example, the target pupils' figures compared favourably with their non-ADHD peers on the following occasions: in case 4 when Edward's teacher used 'Smarties' sweets during a numeracy lesson; in case 5 when Freddy's class received a visit from local firemen; and in case 6 when Adam's class took part in an 'archaeological dig' in the school grounds. "*Signs of the disorder may be minimal or absent when the person is …in a novel setting* (or) *is engaged in especially interesting activities*" (APA, 1994, p.79). Target pupils also generally displayed fewer ADHD behaviours when receiving one-to-one/individual support

(APA, 1994) and where a good relationship had been built up with a teacher or TA (Cooper and Bilton, 2002).

Lower than average recordings for 'No ADHD' behaviours

Numeracy group lessons

It is interesting to note that a small group setting does not always produce the same levels of 'No ADHD' behaviour in target pupils. With the exception of case 4 in both phases and case 3 in the main phase, numeracy lessons were delivered in small ability groups. As with literacy lessons these were taken by teaching assistants in cases 2 and 6. Table **14h** demonstrates that overall FIS figures in the main phase were below average, increasing to just over the average for 'No ADHD' behaviours in the follow up phase.

Table 14h. Numeracy (group) lessons – FIS recordings for 'No ADHD' behaviours

		N (number) and percentage of total recordings for target pupil	
		Main phase	**Follow up phase**
Case 1	N %	948 64	1420 73
Case 2	N %	1176 58	1471 68
Case 3	N %	 **	413 57
Case 4	N %	 **	 **
Case 5	N %	610 57	556 72
Case 6	N %	1456 70	568 73
All 6 cases	N %	4190 63	4428 69

**lessons were delivered in the main class group

Adam (case 6) was the only pupil to achieve higher than average percentages for both phases. This was despite the fact that he often complained about numeracy lessons. There were variations in the attitudes of the other target pupils to numeracy lessons, some of which have been highlighted in case study chapters. Both Ben (case 1) and Freddy (case 5) performed better than their SEN peers in the numeracy groups. Carl (case 2) and Edward (case 4) actively disliked numeracy lessons and struggled with mathematical concepts, sense of time and sequencing (Barkley, 1998, 2005), despite extra support and encouragement. David (case 3) did not show any positive dislike for the subject but did not achieve high 'No ADHD' figures.

Most whole class lessons

Most whole class lessons were usually taken by a class teacher, generally with very little TA support. With the exception of history lessons, which often included the watching of a video, and creative and ICT lessons mentioned above, lower than average 'No ADHD' behaviours were generally recorded for target pupils in whole class lessons. Tables **14i** and **14j** provide details of RE lessons as examples. The delivery of the curriculum in these areas often focused on reflective and abstract teaching and learning approaches which can present difficulties for pupils who display ADHD characteristics (Cooper and Bilton, 2002; Cooper, 2005).

Table 14i. RE lessons – FIS recordings for 'No ADHD' behaviours

		N (number) and percentage of total recordings for target pupil	
		Main phase	**Follow up phase**
Case 1	N %	*	*
Case 2	N %	101 47	130 62
Case 3	N %	*	*
Case 4	N %	90 64	*
Case 5	N %	37 37	132 63
Case 6	N %	91 65	*
All 6 cases	N %	319 54	262 63

*Timetabling precluded access to this curriculum area

Table 14j. RE lessons – ITS recordings for 'No ADHD' behaviours

		N (number) and percentage of total recordings			
		Target pupil		**Comparison pupil**	
		Main phase	**Follow up phase**	**Main phase**	**Follow up phase**
Case 1	N %	05 25	29 48	17 85	44 73
Case 2	N %	*	*	*	*
Case 3	N %	*	30 50	*	46 77
Case 4	N %	40 67	48 60	55 91	68 85
Case 5	N %	71 51	13 22	122 87	42 70
Case 6	N %	59 49	27 34	107 89	71 89
All 6 cases	N %	175 51	147 43	301 89	271 80

* Timetabling precluded access to this curriculum area

School hall contexts – assemblies, hymn practice, rehearsals for performances

With the notable exception of David (case 3), Tables **14k** and **14l** demonstrate that the target pupils displayed lower than average 'No ADHD' behaviours when in a large school hall with either the whole school or the key stage group. They all had difficulty in reading the words of hymns, became easily distracted and had difficulty concentrating in a large group.

Table 14k. School hall contexts – FIS recordings for 'No ADHD' behaviours

		N (number) and percentage of total recordings for target pupil	
		Main phase	**Follow up phase**
Case 1	N	350	190
	%	58	43
Case 2	N	56	259
	%	33	66
Case 3	N	53	59
	%	83	87
Case 4	N	158	213
	%	57	66
Case 5	N	41	61
	%	68	51
Case 6	N	187	71
	%	41	63
All 6 cases	N	845	853
	%	52	67

Table 14l. School hall contexts – ITS recordings for 'No ADHD' behaviours

		N (number) and percentage of total recordings			
		Target pupil		**Comparison pupil**	
		Main phase	**Follow up phase**	**Main phase**	**Follow up phase**
Case 1	N	50	98	67	161
	%	63	49	84	80
Case 2	N	40	22	89	45
	%	33	37	74	75
Case 3	N	49		72	
	%	61	*	90	*
Case 4	N	64	51	94	102
	%	64	43	94	85
Case 5	N	46	34	78	38
	%	57	85	98	95
Case 6	N	72	48	143	87
	%	40	48	79	87
All 6 cases	N	321	253	543	433
	%	50	49	85	83

* Timetabling precluded access to this curriculum area

Other contexts

The individual case study chapters have highlighted other situations in which the target pupils display high levels of ADHD behaviour. These include 'wet play' days; changes to routine (for example, supply teachers taking the lesson, builders in school, 'Children in Need' day); the 'Monday' effect; sitting on the carpet; and some unstructured lessons.

Inconclusive recordings for 'No ADHD' behaviours

In two curriculum areas in particular, music and PE, the systematic observation findings showed a high degree of fluctuation. The delivery and content of these lessons differed between schools and over time. The number of lessons observed was not as high as other curriculum areas and there are several unavoidable gaps in the data, but there could be other reasons for the variation in individual cases and between cases. It is helpful in these situations to refer to the individual case study chapters that include qualitative data which have been extracted from the field notes.

Music

Tables **14m** and **14n** show considerable variability in 'No ADHD' recordings for music lessons. The most extreme variation within a case (case 4) is described in Chapter **11**. Edward received individual support in the main phase music lesson and was able to maintain his concentration, achieving 86% 'No ADHD' behaviours. In the follow up phase there was no TA support and the lessons shown in both FIS (where there were no recordings for 'No ADHD' behaviour) and ITS were observed during the period prior to the increase in medication that led to an improvement in Edward's behaviour. In case 5 Freddy's 71% FIS 'No ADHD' figure was recorded in the nurture group, whereas in the follow up phase he was included in the Y5 class group in a less structured setting.

Table 14m. Music lessons – FIS recordings for 'No ADHD' behaviours

		N (number) and percentage of total recordings for target pupil	
		Main phase	Follow up phase
Case 1	N	*	98
	%	*	36
Case 2	N	65	54
	%	81	59
Case 3	N	*	171
	%	*	82
Case 4	N	65	0
	%	86	0
Case 5	N	74	119
	%	71	29
Case 6	N	*	*
	%	*	*
All 6 cases	N	204	442
	%	78	39

* Timetabling precluded access to this curriculum area

Table 14n. Music lessons – ITS recordings for 'No ADHD' behaviours

		N (number) and percentage of total recordings			
		Target pupil		Comparison pupil	
		Main phase	Follow up phase	Main phase	Follow up phase
Case 1	N	35	39	57	50
	%	58	65	95	84
Case 2	N	21	34	33	54
	%	53	56	83	90
Case 3	N	*	40	*	50
	%	*	67	*	83
Case 4	N	*	21	*	47
	%	*	35	*	78
Case 5	N	*	*	*	*
	%	*	*	*	*
Case 6	N	*	*	*	*
	%	*	*	*	*
All 6 cases	N	56	134	90	201
	%	56	56	90	84

* Timetabling precluded access to this curriculum area

Physical education (PE) (including gymnastics, dance and outdoor games)

Tables **14o** and **14p** show variations in observed behaviour which possibly depended on the type of activity in PE lessons. On one occasion in each of cases 4, 5 and 6, the target pupil displayed such disruptive behaviour that each one was sent out of a lesson. Individual case study chapters provide further details, but it would seem that, in addition to the content, a further deciding factor was the amount of structure or organisation involved in the lesson.

Table 14o. PE lessons – FIS recordings for 'No ADHD' behaviours

		N (number) and percentage of total recordings for target pupil	
		Main phase	Follow up phase
Case 1	N %	*	*
Case 2	N %	78 43	152 66
Case 3	N %	*	94 87
Case 4	N %	248 73	337 62
Case 5	N %	84 70	174 93
Case 6	N %	148 49	131 80
All 6 cases	N %	558 59	888 72

* Timetabling precluded access to this curriculum area

Table 14p. PE lessons – ITS recordings for 'No ADHD' behaviours

		N (number) and percentage of total recordings			
		Target pupil		Comparison pupil	
		Main phase	Follow up phase	Main phase	Follow up phase
Case 1	N %	*	*	*	*
Case 2	N %	28 70	14 35	33 83	28 70
Case 3	N %	*	*	*	*
Case 4	N %	29 48	14 35	56 93	38 95
Case 5	N %	43 54	*	76 95	*
Case 6	N %	72 51	*	128 91	*
All 6 cases	N %	172 54	28 35	293 92	66 83

* Timetabling precluded access to this curriculum area

Classroom management strategies

In addition to the above findings, there was variability in the range of additional classroom management strategies employed by different teachers across contexts in attempts to enhance the on-task behaviour of pupils with ADHD. The majority of these are included in the following list which has been compiled using several sources (Hallowell and Ratey, 1996; Goldstein and Jones, 1998; Kewley, 1999, 2005; Cooper and O'Regan, 2001; Cooper and Bilton, 2002; Spohrer, 2002; DuPaul and Stoner, 2003; Cooper, 2005; DuPaul and Weyandt, 2006). (These and other references containing practical classroom strategies are also identified in the **Bibliography**).

- *Take care with seating arrangements.*
- *Limit extraneous stimuli, such as irrelevant noise and other distractors.*
- *Clarity and precision in the presentation of learning tasks.*
- *Use a calm, consistent approach.*
- *Prompt, positive feedback, praise and encouragement.*
- *Make frequent eye contact.*
- *Break down tasks into small chunks.*
- *Simplify and repeat instructions.*
- *Provide a timer to aid completion of tasks in a specified time.*
- *Create a structured environment.*
- *Prepare for unstructured time.*
- *Increase opportunities for on-task verbal participation.*
- *Provide opportunities for the pupil to demonstrate strengths in the classroom.*
- *Handwriting.* This is difficult for many children with ADHD. Make use of alternative means of presenting knowledge, for example, pictorial representations or using a computer instead of written answers.
- *Provide legitimate opportunities for the pupil to leave his/her seat under teacher direction.*
- *Protect and nurture self-esteem.*
- *Use a combination of proactive and reactive interventions.* Proactive (or antecedent-based) interventions include choice-making, peer tutoring and computer-assisted instruction. Reactive (or consequent-based) interventions include prudent reprimands, token reinforcement, response cost and self-management procedures.

14.3.2 Variability in ADHD symptoms over time

Fixed Interval Sampling (FIS) findings

The findings from the FIS observation technique apply only to target pupils. It can be seen from Table **14q** that in the main phase, cross-case percentage figures for 'No ADHD' behaviour recorded across *all* settings ranged from 61% to 81% of the total observations. The following year the range had narrowed to between 55% and 73%. Appendix **14.2** provides a detailed analysis of FIS observation recordings for 'No ADHD' behaviour by curriculum areas. Recordings for 'No ADHD' behaviours across

all settings over all six cases remained the same at 66%, with 'hyperactive-impulsive' and 'inattention' behaviours showing only slight variation over the two phases.

Following the transition from the main phase to the follow up phase, three pupils achieved increased FIS percentages across all settings for 'No ADHD' behaviours and three showed a decrease. It is not possible to account fully for these variations. They have been examined in the individual case study chapters, where there were found to be differing possible explanations which link variability over time with differences across settings, contexts and task demands.

Table 14q. Analysis of FIS recordings for behaviour across all settings over time: N (number of recordings) and percentages (see Appendix 14.2)

		Main phase			Follow up phase		
		No ADHD	**Inattention**	**Hyp-imp**	**No ADHD**	**Inattention**	**Hyp-imp**
	N	2993	427	804	3427	1107	698
Case 1	%	71	10	19	66	21	13
	N	2928	1098	766	4316	1143	589
Case 2	%	61	23	16	71	19	10
	N	1777	231	192	1366	383	139
Case 3	%	81	10	09	73	20	07
	N	1875	832	389	2305	1333	574
Case 4	%	61	27	12	55	32	13
	N	3013	1087	668	3752	1222	882
Case 5	%	63	23	14	64	21	15
	N	3572	1365	583	1511	466	87
Case 6	%	65	25	10	73	23	04
All 6	N	16158	5040	3402	16677	5654	2969
cases	%	66	20	14	66	22	12

Of the three boys whose percentage of 'No ADHD' behaviours showed an increase over time, Carl (case 2) had stopped taking medication and also began receiving individual SSA support for two mornings and one afternoon per week. Adam (case 6) had received a formal diagnosis of ADHD and had started taking medication in school. The least difference between the main phase and the follow up phases for 'No ADHD' behaviours was in case 5. This marginal increase in Freddy's 'No ADHD' behaviours is likely to be a sampling fluctuation. The most significant decrease in 'No ADHD' behaviours, from 81% to 73%, was recorded for David (case 3), who transferred to a middle school and whose school attendance rates deteriorated. In case 1 the decrease in Ben's 'No ADHD' behaviour was possibly as a result of his relationships with different teaching staff. Edward (case 4), who showed a decrease in 'No ADHD' behaviours from 61% to 55%, experienced problems with his medication dosage.

Instantaneous Time Sampling (ITS) findings

Table **14r** provides a longitudinal analysis of the 'No ADHD' behaviour figures recorded during observations in *all* settings using ITS (see Appendix **14.3** for a detailed analysis of recordings for 'No ADHD' behaviours by curriculum areas and Appendix **14.4** for details of recordings for ADHD behaviours). During the main phase for the target pupils 'No ADHD' figures range from 46% to 67%. Figures for the follow up phase narrowed slightly to between 45% and 63%.

Table 14r. Analysis of ITS recordings for 'No ADHD' behaviours across all settings over time: N (number of recordings) and percentages (see Appendix 14.3)

		Main phase			Follow up phase		
		Target	**Comparison**	**Difference**	**Target**	**Comparison**	**Difference**
Case 1	N	357	594	237	352	507	155
	%	51	85	34	57	82	25
Case 2	N	390	577	187	461	729	268
	%	54	80	26	54	85	31
Case 3	N	767	950	183	139	204	65
	%	67	83	16	58	85	27
Case 4	N	497	941	444	507	860	353
	%	46	87	41	52	88	36
Case 5	N	523	832	309	413	586	173
	%	58	92	34	63	89	26
Case 6	N	481	825	344	107	207	100
	%	51	88	37	45	86	41
All 6 cases	N	3015	4719	1704	1979	3093	1114
	%	55	86	31	55	86	31

It can be seen that amongst the target pupils, three cases (1, 4 and 5) showed marginal increases in the percentage of recorded 'No ADHD' behaviours over time. In case 2 the percentage remained the same and two cases (3 and 6) showed a decrease. Similar slight changes were recorded for the comparison pupils. In case 4 both target and comparison pupils appeared to show a small increase in 'No ADHD' behaviours, and in case 6, both showed a small decrease. These differences may possibly be due to sampling fluctuation.

As would be expected, all six target pupils displayed more ADHD behaviours (and therefore fewer 'No ADHD' behaviours) than their non-ADHD comparisons during both phases of the research study. It can be seen that differences in 'No ADHD' behaviour between target and comparison pupils ranged from 16% to 41% in the main phase and from 25% to 41% in the follow up phase. For both years the average difference over all cases was 31%, indicating that the differences were stable over time. The most significant differences between target and comparison pupils were in case 4 in the main phase and case 6 in the follow up phase (41% in each case). The least difference (16%) was recorded in case 3 in the main phase. It can be seen from data

shown in Appendix **14.4** that in both phases target pupils displayed approximately three times as many ADHD behaviours as did comparison pupils (45% as opposed to 14%). This concurs with findings from a study by Lauth *et al*. (2006), in which

> *" …students with ADHD problems were significantly more disruptive and inattentive. Their off-task rates were two to three times as high as the control students"* (p.399).

All observation findings over time (FIS/ITS)

In general, the target pupils displayed more of the 'inattention' behaviours than the 'hyperactive-impulsive' behaviours. The only exception was in the main phase on both FIS and ITS recordings where Ben (case 1) displayed more 'hyperactive-impulsive' behaviours than 'inattention' behaviours (see Table **14q** for FIS details and Appendix **14.4** for ITS details). He was one of the two target pupils not formally assessed for ADHD by the end of the research period and therefore not receiving medication.

Hypotheses - variability in ADHD symptoms

- In school settings, situational and longitudinal variability in ADHD behaviours appears to occur both within cases and across cases. There may be differing possible explanations for this variability.
- Pupils with ADHD appear to display more of the 'inattention' behaviours than the 'hyperactive-impulsive' behaviours in school contexts.
- The use of concrete and kinaesthetic teaching and learning styles, rather than reflective, abstract styles may lead to higher attainment in pupils with ADHD.
- Lessons involving computer-based tasks and novel approaches may produce fewer ADHD behaviours.
- Small ability groups may lead to higher attainment by pupils with ADHD in literacy lessons, but not necessarily in other curricular areas.
- Situations where one-to-one support is provided and where a good relationship has been built up with a teacher or teaching assistant may produce lower levels of ADHD behaviour.
- Pupils with ADHD may display more disruptive behaviour in unstructured whole class lessons.
- The use of a range of classroom management strategies may help improve the on-task behaviour of pupils with ADHD.
- Differences between overall recorded behaviours for pupils with ADHD and non-ADHD comparison pupils appear to be stable over time.

14.4 Co-existing conditions/ associated difficulties

On questionnaires in the 2003 school survey in **Part 1** of the present research, three of the target pupils were reported as experiencing comorbid or coexisting conditions. During the undertaking of the case studies all six target pupils were identified with associated difficulties (see Table **6a** in Chapter **6**). The information included in the following section, which compares data from individual case study Chapters **8 – 13**, falls into two broad categories: *cognitive difficulties* which may impede learning and *affective difficulties* which are more concerned with social, emotional and behavioural problems. Details are also provided of other difficulties experienced by target pupils.

Cognitive difficulties

Five of the six target pupils experienced general learning difficulties, with Carl (case 2) reported as having specific learning difficulties. Data gathered in **Part 2** of the present research confirm that they all had problems with: basic literacy and numeracy skills; speech and language development; mathematical concepts and sequences; and time management and sense of time (Kewley, 2005). They attained lower than expected levels in SATs and non-statutory tests.

Affective difficulties

All six target pupils also suffered from emotional and behavioural difficulties, with Freddy's problems (case 5) reported as 'severe'.

Self-esteem

Table **14s** presents a summary of the findings from the self-esteem questionnaires used in the two phases of the present research. Chapter **5** has provided details of the questionnaires, together with limitations to the validity and reliability of the results. The target pupils' scores show variability, ranging between 12 and 21 out of a possible 24 in the main phase and 10 and 18 in the follow up phase. Ben (case 1) achieved the highest score amongst the target pupils on both occasions. It can be seen that in both the main phase and follow up phase, two target pupils appeared to score higher than the class average score (case 1 in both phases, case 4 in the main phase and case 2 in the follow up phase). The class average scores increased or stayed the same over time, whereas the target pupils' scores showed greater variation, ranging from a decrease of four to an increase of five out of 24. Although there is a possibility of sampling fluctuations, it appears that in cases 1, 4 and 5 the scores decreased over time. David (case 3) scored

the same in both phases. In cases 2 and 6 the scores increased in the follow up phase, with Adam (case 6) showing the greatest increase from 12 to 17 out of a possible 24. As a full follow up study was not possible in case 6, the class average for the follow up phase is not known. As has been detailed in Chapter **13**, Adam had been diagnosed with ADHD and had begun taking medication in the follow up phase.

Table 14s. Summary of cross-case self-esteem measures

	Main phase – scores out of 24		Follow up phase – scores out of 24		Differences over time	
	Target pupil	**Class average**	**Target pupil**	**Class average**	**Target pupil**	**Class average**
Case 1 Ben	21	16	18	17	- 3	+ 1
Case 2 Carl	15	16	17	16	+ 2	Same
Case 3 David	13	14	13	17*	Same	+ 3*
Case 4 Edward	16	15	12	16	- 4	+ 1
Case 5 Freddy	14	16	10	18*	- 4	+ 2*
Case 6 Adam	12	18	17	#	+ 5	#

* different school

\# information not available as a full follow up study was not possible

Social relationships

The target pupils experienced varying degrees of social skills problems (Cooper and Bilton, 2002; DuPaul and Stoner, 2003). Four of the six individual pupils received some form of extra social skills training in school. This usually took place in small groups, often in combination with literacy skills. Findings from the sociometric question included on the self-esteem questionnaire show that the target pupils were not chosen as playmates. This finding is in line with studies employing sociometric measures which have found high rates of peer rejection for children displaying ADHD-related behaviours (DuPaul and Stoner, 2003).

Emotional immaturity

All six target pupils appeared to be more emotionally immature than their peers (Cooper and Bilton, 2002). The findings concur with the suggestion by Green and Chee (1997) that pupils with ADHD have the *"social and emotional maturity of a child two-thirds their age"* (p.6). They were often observed putting fingers in their mouths or sucking or chewing pencil cases, other classroom equipment or clothing. Freddy was almost constantly seen sucking his thumb, and he and Edward brought in small toys from home. David displayed signs of anxiety and continuously sought reassurance. Adam and

Edward often became upset and cried easily. A lack of appropriate inhibition was observed on occasions when both Edward and Freddy hugged adults, and Edward also touched and kissed peers inappropriately (Selikowitz, 2004).

Other difficulties

Children with ADHD are often very sensitive to touch, smell, noise and a wide range of other stimuli (Kewley, 1999, 2005; Alban-Metcalfe and Alban-Metcalfe, 2001). Some may be unduly affected by cold and warmth (Weinstein, 2003). There are references to oversensitivity in the chapters on cases 1, 2 and 4. There is a higher likelihood of sleeping problems in children with ADHD than in non-ADHD children. These may include difficulties with time taken to fall asleep, frequent night waking and tiredness on awakening (Barkley, 1998). Carl (case 2) was the only target pupil identified as having sleep problems. Edward and Freddy rarely smiled and were heard to make several references to death and dying (Kewley, 2005). As described in Chapter **8**, Ben appeared to suffer from facial tics. These often co-exist with ADHD (Pliszka *et al.*, 1999; Delfos, 2004). There are references in cases 4 and 6 to the possible adverse effects of food additives (E numbers) on levels of hyperactivity (Kinder, 1999a). The target pupils all experienced problems with fine motor control which led to handwriting difficulties (Harris, 2004; Kewley, 2005).

Hypotheses - comorbid and associated difficulties

- Pupils with ADHD appear to experience a range of associated cognitive and affective difficulties which may affect their learning and behaviour in school.
- Levels of self-esteem may vary between pupils with ADHD. They do not all appear to suffer from poor self-esteem.
- There appears to be a high degree of emotional immaturity amongst pupils with ADHD.
- Pupils displaying ADHD-related behaviours appear to be rejected or ignored by their peers.
- Pupils with ADHD may benefit from more emphasis on an affective curriculum in schools, especially the teaching of social skills.

Summary

This chapter has provided details of cross-case analyses of the findings of the six case studies undertaken in **Part 2** of the present research, identifying hypotheses which have been generated in three main areas. Chapter **15** will present discussion and reflections on the implications for key issues of the findings presented here, together with the findings from **Part 1**.

SECTION IV – DISCUSSION, REFLECTIONS

Chapter 15

Discussion

The chapter begins in section **15.1** with an evaluation of the methodology used in **Part 1** and **Part 2** of the present research, including limitations. Section **15.2** provides a discussion of the implications of the findings from both parts of the research (presented in detail in Section III, Chapters **7 – 14**). This includes a consideration of current theoretical concerns surrounding the concept of Attention Deficit Hyperactivity Disorder (ADHD). These are examined on several levels including the general concept of the disorder, its manifestations in everyday life and assessment procedures. The discussion, from a primarily educational perspective, focuses on key issues involved in effective inclusive education for pupils with ADHD. These centre on:

- multi-professional approaches to identification and management of ADHD; and
- pedagogical and curricular flexibility in schools.

A brief consideration of the wider educational, health and social implications at local and national levels is included.

15.1 Evaluation of methodology

As previously described, a mixed methods approach was adopted in the present research. This involved the use of multiple methods of data-gathering which have added to validity and reliability and provided 'between-method' triangulation (Delamont, 2002). As proposed in the Statement of the Problem (Chapter **2**), where patterns of variability have emerged, the methodological approach has enabled potentially testable hypotheses to be derived (Appendix **15.1** summarises the hypotheses generated in **Parts 1** and **2**). These have been itemised in Chapter **7** (**Part 1** findings) and Chapter **14** (cross-case analyses of **Part 2** findings) and are in the following areas:

- incidence and gender ratio of ADHD;
- multi-professional identification, assessment and management of ADHD;
- school training needs;
- ADHD symptoms across curricular contexts and time; and
- comorbid/associated features.

Part 1 - survey methodology

The questionnaire survey approach used in the 2003 schools survey in LEA 1, together with analyses of surveys from other LEAs, has enabled data on the incidence, identification and management of ADHD to be:

- collected for all schools within the LEA;
- extracted for KS1/2 pupils and subjected to further analyses;
- compared in detail with LEA 2 results; and
- compared more generally with results from further LEA surveys.

Although there was an encouraging 94% response rate from schools in LEA 1, there were limitations to the research and care must be taken when interpreting the results. Firstly, the 2003 survey focused on only one LEA in England, in which not all schools replied. There were uncompleted questions on some questionnaires and 'not known' reported in several cases. Secondly, the replies were based on the knowledge and perceptions of school staff only. These two points also apply to surveys examined from other LEAs. Thirdly, where comparisons were made with data from four other LEAs, variations may have occurred due to the differing format of the questionnaire, differing response rates, the size and make-up of the school populations, demographic differences and the dates the surveys were undertaken.

Part 2 - case study methodology

The combination of qualitative and quantitative methods adopted in the case studies in **Part 2** of the present research has produced a wide range of unique data on the situational variability of ADHD symptoms and identification and assessment procedures in schools. This was a small-scale study and there are acknowledged limitations to the findings.

As with any practice-based or real world research there was a need for flexibility on the part of the researcher (Robson, 2002). Even though a copy of each class timetable had been provided, there was no guarantee that there would be the opportunity to observe the individual pupils in lessons as planned on each visit. There were often changes to timetables at class and school level which prevented observations being carried out in particular curriculum areas.

One researcher conducted all the observations, although inter-rater reliability in the use of observation categories was checked (see Chapter **5**). A second observer could have added to the reliability of the findings and possibly recorded some Fixed Interval Sampling (FIS) observations of comparison pupils. This would have enabled more comparisons with the target pupils regarding variability in the proportion of lessons spent displaying ADHD or 'No ADHD' behaviours. Conversely, it could be argued that two observers might have produced "*greater interference with the natural situation*" (Colwell and O'Connor, 2003, p.123).

15.2 Discussion of findings

Incidence

There continues to be debate over the existence of the concept of ADHD (Barkley, 1998, 2005; Cooper and Bilton, 2002; Timimi, 2004; Timimi and Taylor, 2004), as well as differing views as to the core symptoms and definitions of the features (Barkley, 1998; Robertson, 2003; Wilding, 2004, 2005). Even those who do not acknowledge the existence of ADHD, as diagnosed using DSM-IV criteria (APA, 1994), can be in no doubt that in order to provide effective inclusive education, it is necessary for those pupils who experience particular difficulties with learning and behaviour to be identified so that their needs may be met (DfES, 2001a, 2003, 2004a).

The prevalence rate for ADHD was found to be approximately 0.5% (5 pupils per 1000) of each school population examined in **Part 1** of the present research, with the rate in the population of the eight schools involved in **Part 2** case studies approximately 0.6% (see Appendix **14.1**). These rates are in line with lower estimates of 0.5% – 1% of children in the UK with ADHD or hyperkinetic disorder (Taylor and Hemsley, 1995). This may be only a conservative estimate of incidence, with suggestions that the disorder is underdiagnosed (see below). If schools' own estimates were taken into consideration, prevalence rates in LEAs 1 and 4 would be nearer the 1% of the total school population suggested in recent published figures (NICE, 2000, 2006).

Although the present research focuses only on selected LEA school populations, an incidence rate of 0.5% of the total school population in the UK with a diagnosis of ADHD has implications for future planning for the successful inclusion of such pupils in mainstream education (DfES, 2001a, 2001c, 2003, 2004a). All five LEAs found that

the highest incidence rates were amongst pupils at KS2, with a decline in numbers in KS3 and KS4. These findings concur with suggestions of higher prevalence rates in the age range of 6 to 11 years (Buitelaar, 2002) and

> *"fit in well with the research evidence which indicates a relative remission of symptoms and reduction in prevalence with maturation"* (Holowenko and Pashute, 2000, p.189).

The six target pupils in **Part 2** case studies did not show much change in remission of symptoms over one year.

When funding issues are addressed it is important that primary schools in particular have access to sufficient resources to aid them in supporting pupils with ADHD and in "*removing barriers to learning - by embedding inclusive practice in every school"* (DfES, 2004a, introduction).

The boy:girl ratio of 9:1 pupils identified with ADHD in the surveys examined in **Part 1** concurs with higher published gender estimates (APA, 1994; Kewley, 1999). The gender ratio in the eight schools included in **Part 2** case studies was 7.5:1.There is a possibility of an under-representation of girls in the figures in both parts of the present research. Boys are more likely to be identified because they are more likely to be hyperactive and therefore to be noticed to have difficulties (Munden and Arcelus, 1999; Biederman and Faraone, 2005). Cooper and Bilton (2002) suggest *"girls and women are just as likely to have ADD/without hyperactivity as are boys and men"* (p.87). This could indicate the need for increasing the awareness and knowledge of all sub-types of ADHD amongst professionals involved in the identification and diagnosis of the disorder (Ball, 2001; Kirby *et al*., 2005).

Multi-professional identification, assessment and management of ADHD

In **Part 1** of the present research, results from the surveys in LEA 2 in 1998 and LEA 4 in 1999 both show that 36% of pupils diagnosed with ADHD had been issued with a Statement of SEN (Ramsden, 1998; Holowenko and Pashute, 2000). Four to five years later approximately one-fifth of pupils identified in the 2003 survey (and the KS1/2 study) in LEA 1 were known to have Statements of SEN. This could indicate variability in identification and assessment procedures in different LEAs. It could be due in part to changes in government policy suggesting moves away from Statutory Assessments and the issuing of Statements of SEN, towards inclusive education and personalised learning

(DfEE, 1997; DfES, 2001a, 2001c, 2003, 2004a; House of Commons, 2006). It is not known if the Statements issued were specifically for ADHD. The majority of those pupils identified as having a diagnosis of ADHD

> *"have their needs met without the provision of a Statement for SEN suggesting that a diagnosis of ADHD on its own is not grounds for an automatic statutory assessment"* (Holowenko and Pashute, 2000, p.189).

This applied in four of the six case studies in **Part 2**, where the target pupils were at the School Action Plus stage of the SEN Code of Practice assessment process (DfES, 2001a).

Assigning a label such as ADHD to a pupil is viewed by some in a positive light as an aid in providing the necessary educational and social support (Cooper and Ideus, 1995; Barkley, 1998; Cooper and Bilton, 2002; Steyn *et al*., 2002). Others advocate the use of a non-labelling approach in the learning environment (Cains, 2000; Leech, 2004). The important factor is that labels should be used consistently across disciplines. They should

> *"provide a picture of the child's functional deficits and result in a more complete understanding of how to support different children with their different patterns of difficulty"* (Kirby *et al.*, 2005, p.126).

In the management of ADHD there is a need for a multi-modal approach to a multi-faceted problem. It is essential that professionals from different disciplines agree on a set of common assumptions in order to ensure effective multi-professional working (BPS, 2000a). In the LEA surveys studied in **Part 1** of the present research educational professionals were reporting on the numbers of pupils with a clinical diagnosis of ADHD. There were indications that not all schools had accurate information regarding the diagnosis of the disorder. This could be because it is a medical disorder and there is a lack of effective inter-disciplinary communication between health and education services. The findings from four LEA surveys suggest a definite need for improvements in multi-professional working (Hailemariam *et al*., 2002). Only one LEA reported improvements over a four year period in joint working between health and education professionals following changes to the multi-disciplinary ADHD referral pathway (Evans, 2004).

A lack of effective multi-disciplinary approaches to identification and treatment could lead to underdiagnosis (Cosgrove, 1997; Kewley, 1999; Holowenko and Pashute, 2000;

Alban-Metcalfe and Alban-Metcalfe, 2001), or undertreatment of ADHD (NICE, 2000; Timimi and Taylor, 2004). *"If untreated the disorder may interfere with educational and social development and predispose to psychiatric and other difficulties"* (Kewley, 1998, p.1594). Untreated ADHD could also lead to exclusion from mainstream education (Kewley, 1999; Arcelus *et al.*, 2000), conduct disorder in adolescence and delinquency, and crime and substance abuse in later life (Cosgrove, 1997; Kewley, 2004, 2005). Freddy (case 5), who had not received a formal diagnosis of ADHD, had attended a local Pupil Referral Unit (PRU) on a part-time basis. Following the research period there was a suggestion that he might have to attend the PRU full-time.

UK government legislation and guidance emphasises the need for early intervention for pupils with special educational needs and improved co-ordination between education, health and social services professionals (DfES, 2001c, 2003, 2004a, 2005a). The **Part 1** findings from LEAs 1 and 2 show that the highest proportion of pupils had been diagnosed with ADHD between the ages of 5 – 9 years. *"Schools are increasingly looking at ways of identifying or screening for ADHD at a young age"* (Kewley, 2005, p.36).

The findings from both parts of the present research suggest variability in schools within an LEA and between five LEAs in effective multi-professional working in the identification and management of ADHD. It is to be anticipated that ongoing changes in the UK in children's services will improve provision for those pupils with ADHD. Information gathered in **Part 2** from schools in one LEA indicating a shortage of child psychiatrists concurs with published evidence suggesting variable access to child and adolescent mental health services, leading to long waiting lists for assessment (NICE, 2000). One of the key priorities in the Government's recent strategy for SEN is

> *"improving access to comprehensive Child and Adolescent Mental Health Services (CAMHS) and behavioural support services for all children, including those with learning difficulties and emotional, social and behavioural difficulties"* (DfES, 2004a, 4.29, p.87).

The use of medication in the treatment of ADHD is one of the most contentious issues surrounding the disorder. The main criticisms focus on

- possible side effects (Baldwin and Anderson, 2000),
- the potential for drug abuse and addiction (Baldwin and Cooper, 2000) and

- the lack of evaluation of long-term efficacy (Alban-Metcalfe and Alban-Metcalfe, 2001).

Other areas of debate include

- the use of medication as a form of social control (Baldwin and Anderson, 2000; Timimi, 2005),
- the involvement of large drug companies and their backing of parent support groups (Timimi, 2005) and
- the costs to health services (NICE, 2000,2006).

Part 1 findings show that across five LEAs an average figure of 77% of all pupils diagnosed with ADHD were known to have been prescribed medication. From an educational perspective, positive changes with medication were reported in the majority of diagnosed pupils in five LEA surveys (the information was not provided in LEA 5b). This supports suggestions that medication has been shown to produce favourable results in 70% to 80% of children studied (Cooper and Bilton, 2002; DuPaul and Stoner, 2003). The majority of pupils were reported to be taking methylphenidate (Ritalin or Concerta). There are cost implications for the National Health Service (NHS) in the UK.

> *"The cost of methylphenidate is about £200 per child per annum if the average daily dose is 30mg. It has been estimated that the total annual cost of methylphenidate therapy, including additional costs of assessment and follow-up, would be £500 to £1,000 per child"* (NICE, 2000, p.6).

More recent guidance from the National Institute for Clinical Excellence (NICE) (2006) states the net ingredient cost of prescriptions for methylphenidate and dexamfetamine in 2004 was almost £13 million and modified release formulations accounted for 54% of all methylphenidate prescriptions. Recommendations are made for the use of methylphenidate, atomoxetine and dexamfetamine, with the suggestion,

> *"If there is a choice of more than one appropriate drug, the product with the lowest cost (taking into account the cost per dose and number of daily doses) should be prescribed"* (NICE, 2006, p.5).

Over half (56%) of the total number of pupils taking medication reported in the 2003 survey in LEA 1 took their medication at home, compared to 13% in the 1998 survey undertaken in LEA 2 (Ramsden, 1998). This suggests an increase in the use of the modified release formulation of methylphenidate in line with NICE figures. This formulation (along with atomoxetine) is more expensive than the immediate release formulations (NICE, 2006). Once daily formulations are beneficial as they do not require mid-day doses to be administered at school. The financial costs to the health,

social and education services need to be weighed against the benefits provided by the use of stimulant medication, bearing in mind the problems detailed above which could occur due to lack of correct treatment for ADHD. The longer term effects of medication are far from clear and a legitimate field for further research.

Other financial implications

There are other implications for public spending in addition to the costs of assessment, medication and follow up discussed above. In the UK, families with a disabled child are entitled to claim Disability Living Allowance (DLA). As ADHD is a medical diagnosis, some parents are encouraged to apply for a weekly cash payment of DLA, as a means of reducing the burden of ADHD at a family level. They are often made aware of the allowance by clinicians. Steyn *et al.*, writing in 2002, claimed that,

> *"even using the lower care component DLA rate of £14.20, the annual DLA cost could exceed £100 million as increasing proportions of children with a diagnosis of ADHD are included in treatment programmes"* (Steyn *et al.*, 2002, p.524).

In 2002 weekly amounts of DLA varied between £14.20 and £90.95. At the time of writing in 2006 these amounts range from £16.50 to £105.70 per week.

School training needs

The perceptions and knowledge of teachers and their attitudes towards ADHD could have implications for the delivery of suitable educational provision for pupils with the disorder (Maras and Redmayne, 1997; Clark *et al.*, 1999; Cains, 2000; Cooper and Bilton, 2002; Couture *et al.*, 2003; Vereb and DiPerna, 2004; West *et al.*, 2005). If multi-professional approaches to identification and management of ADHD are to be effective it is necessary for educational professionals to be provided with opportunities to increase their knowledge and expertise in managing all types of SEN, including ADHD, in the school situation. There has been no specific mention of ADHD in government guidance to date. The UK Government's strategy for SEN states,

> *"We want to see all teachers having the skills and confidence – and access to specialist advice where necessary – to help children with SEN to reach their potential"* (DfES, 2004a, p.50).

All LEAs should have a policy which includes background information on ADHD; discussion of issues regarding identification, assessment and management; appropriate educational strategies; the role of other professionals and agencies and relationship to the SEN Code of Practice, Statementing procedure and individual education plans

(Kewley, 1999). There has been recent acknowledgement of the need for training in SEN during initial teacher training and continuing professional development for teachers (House of Commons, 2006; Macbeath *et al*, 2006). According to a report in *The Times Educational Supplement*, of the 10 out of 85 teacher training institutions in England and Wales who replied to a question on training in ADHD,

> *"Six hours training during a three-year course was the most offered. Three colleges offered nothing, one said two hours and the others an hour or less. Two admitted they offered ten minutes"* (Stewart, 2006, p.23).

Although the findings from both **Parts 1** and **2** of the present research suggest some increase in awareness of ADHD amongst teachers, the response in the 2003 survey in LEA 1, together with feedback from delegates at two ADHD study days, clearly underlines the need for more training, information, research and proactive strategies to be made available to schools (Lovey, 1999; Overmeyer and Taylor, 1999; DuPaul and Stoner, 2003; Kirby *et al.*, 2005). The findings from the LEA 4 survey reported similar concerns amongst teachers.

Variability in ADHD symptoms across contexts and over time

The findings from systematic observations in **Part 2** agree with suggestions that there is curricular variability, both within-child and between pupils, in ADHD symptoms across contexts and over time (Hinshaw, 1994; Barkley, 1998; Daniel and Cooper, 1999; DuPaul and Stoner, 2003). Taking into account theories concerning the nature of ADHD, the following discussion focuses on:

- the delivery and organisation of the curriculum;
- teaching and learning styles; and
- grouping and support in the classroom.

The Education Reform Act (DES, 1988) first introduced the National Curriculum, *"with its contentious league tables and routine testing"* (Hanko, 2003, p.126). The demands of the National Curriculum present particular difficulties for children who display ADHD-type symptoms. Many of the characteristics associated with ADHD, both those included in the DSM-IV criteria and other comorbid conditions, can prevent them from achieving academically. The **Part 2** target pupils' difficulties included time management and organisation, sustaining attention and following through instructions. They also experienced problems with basic literacy skills such as reading and writing.

> *"The increasing emphasis of the NC, through the application of timed Standard Assessments Tasks, on children's ability to express their knowledge and understanding of subjects in written answers under time-limited examination conditions creates special problems for children with ADHD"* (Cooper and Bilton, 2002, p.58).

If effective inclusive education is to be provided for pupils with ADHD, there is a need for flexibility in schools which involves not only *"a reconceptualisation of the curriculum"* (Wedell, 2005, p.6), but also changes in the perceptions of ADHD characteristics. Cooper (2005) suggests using *"pedagogical strategies designed to exploit, rather than inhibit, some of the characteristics associated with ADHD"* (p.130).

Recent conceptualisations of ADHD point to the lack of inhibitory control and weaknesses in executive function rather than attention as the underlying problem (Holowenko, 1999; Lawrence *et al.*, 2004; Barkley, 1998; 2005; Brown, 2004; 2006; Band and Scheres, 2005; Nigg, 2005; Wilding, 2005). It has been suggested that the inhibitory performance of pupils with ADHD might be context dependent and that one of the areas in which they perform as well as typically developing pupils is in the use of computers (Houghton, 2004b; Shaw, 2004; Shaw *et al.*, 2005). This could explain the findings in **Part 2** in which observation recordings of 'No ADHD' behaviours for target pupils in ICT lessons were higher than average and the pupils seemed able to sustain attention. 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).

The creative activities in which the target pupils in **Part 2** of the present research achieved higher levels of 'No ADHD' behaviours relied on active experimentation using kinaesthetic and sensory skills. These findings agree with Daniel and Cooper (1999) who found that students displayed lower levels of dysfunctional behaviour in lessons involving sensory and kinaesthetic skills. In general schools tend to focus on reflective and abstract teaching and learning in many whole class lessons for foundation subjects such as RE and geography, rather than the concrete and active styles favoured by pupils with ADHD (Cooper and Bilton, 2002; Cooper, 2005).

Findings from **Part 2** case study observations suggest that target pupils displayed more ADHD behaviours in whole class lessons that were often less structured than core subjects. In lessons such as music and PE which showed fluctuation in ADHD

symptoms, the higher levels of ADHD behaviours were recorded during less structured activities which may not have provided sufficient stimulation for target pupils. There were numerous references in the field notes to target pupils moving around the classroom to sharpen pencils or asking permission to leave the room to go to the toilet or to get a drink more often than their peers, possibly in efforts to *"seek out alternative stimulation"* (Zentall, 1993, p.150). The addition of novelty approaches in unstructured lessons could help *"guide attention to what is important"* (Zentall, 1993, p.150). It has also been suggested that physical education can have a positive effect on the behaviour of pupils with EBD (Medcalf *et al*., 2006). The inclusion of periods of structured physical activity throughout the school day could produce positive outcomes for pupils with ADHD (Cooper, 2005). This could be particularly useful, for example, on 'wet play' days, when children miss out on opportunities to move about in the playground.

There is a need for flexibility in pupil grouping in the classroom. Findings from observations in case studies in **Part 2** indicate that ability grouping in some curricular areas increases pupils' attainment (see reference to literacy groups in Chapter **14**). However, the findings also suggest that, as the target pupils experienced difficulties with mathematical concepts, they did not perform well in numeracy lessons even in small groups with plenty of support. Other small groups, such as a Speech and Language group in case 1 and an Additional Literacy Support group in case 4, produced higher levels of 'No ADHD' behaviour in target pupils.

The two target pupils who had experience of working in nurture groups (cases 3 and 5) were observed to achieve higher levels of 'No ADHD' behaviour in these groups than in other settings (see Chapters **10** and **12**). In case 5 a report on Freddy stated that there was

> *"great fluctuation between his behaviour in the security of the morning Nurture group …outside the class and in the larger afternoon group"* Extract from letter from educational psychologist (EP), October 2002.

These findings agree with suggestions that although there is some evidence that pupils with hyperactivity or ADHD may benefit from the nurture group setting there are concerns that in pupils with hyperactivity,

> "*behavioural gains made in the nurture group transfer less effectively to mainstream settings, when compared with children exhibiting other types of behavioural problems"* (Cooper and Bilton, 2002, p.71).

Higher levels of 'No ADHD' behaviour were also recorded for target pupils on occasions when one-to-one support was provided. Although this was usually adult support there were also references to peer support. DuPaul and Weyandt (2006) refer to this as *"peer tutoring"*, a suggested *"proactive strategy"* (p.346). In highlighting the effectiveness of one-to-one support for a pupil with ADHD, Pester (2002) emphasises the significance of the quality of the relationship between the adult and the pupil. The field notes include references to the reluctance on the part of three of the target pupils to 'share' a teaching assistant or special support assistant (SSA) with other pupils and there were concerns that Carl (case 2) was becoming too dependent on his SSA.

The section on school training needs (above) has highlighted findings from both **Parts 1** and **2** of the present research which emphasise the need for increased awareness, knowledge and expertise in ADHD. It is essential for teachers and teaching assistants to work together in supporting pupils with special educational needs (Wedell, 2005). There is a need for teachers to receive training in the management and deployment of support staff (Groom and Rose, 2005).

In the majority of case study schools any TA support in the classroom was generally in the mornings when literacy and numeracy lessons were taught, with a TA taking charge of teaching SEN groups in two schools (2 and 6). The class teacher often had no support in the whole class lessons in the afternoons. Pupils with ADHD might benefit from extra support in whole class lessons. These lessons could adopt different strategies including the teacher focusing on those pupils who need extra support and the TA overseeing the rest of the class (Wedell, 2005).

The target pupils in **Part 2** also experienced difficulty with changes such as being taught by a supply teacher. Freddy (case 5) in particular displayed considerably more ADHD behaviours in lessons taken by supply teachers. Referring to future changes in the role of teachers and teaching assistants being under discussion, Wedell (2005) suggests

> *"some teachers may feel that a teaching assistant who is familiar with the pupils in a class is better placed to provide continuity than a supply teacher who is unfamiliar with the school"* (p.8).

Cross-case analysis of the observation findings from the six case studies in **Part 2** of the present research showed that the overall percentages of all lessons in which 'No

ADHD' behaviour was displayed by the target pupils appeared to be stable over time, at 66% using Fixed Interval Sampling (FIS) and 55% using Instantaneous Time Sampling (ITS) (with non-ADHD comparison pupils achieving 86%). As previously mentioned, the term 'No ADHD' behaviours was used in recordings throughout the present research rather than 'on task'. In making comparisons with previous research, allowances need to be made for differences in categories and terms used in recording observations and the lack of a longitudinal element in some studies. The ITS figures for 'No ADHD' behaviour in the present research are broadly in line with suggestions in a study by DuPaul and Rapport (1993) who found that children with ADHD participated in 55.7%, while control students participated in 80.3% of lessons. Findings from a study by Lauth *et al*. (2006) show that

> *"students with ADHD problems were on task as expected by the teacher in 45% to 55% of the time (compared with rates of 73% to 77% of the time for control children)"* (p.399).

However, three categories of on task behaviour were used in these observations. When including all three categories, pupils with ADHD achieved 66% to 75% and controls 86% to 88% (Lauth *et al*., 2006).

Comorbid and associated difficulties

The **Part 1** findings in LEA 1 agree with suggestions that 70% of children with ADHD may have comorbid conditions (Pliszka *et al.*, 1999). Chapters **8 – 14** include details of cognitive and affective difficulties and other associated problems experienced by all six target pupils in **Part 2** case studies. These co-existing conditions may add to the significant educational, social and emotional problems experienced by a child with ADHD. They may also provide further challenges for the pupil and the teacher in the school environment.

The findings from self-esteem questionnaires used in **Part 2** of the present research imply that the target pupils' scores do not generally concur with suggestions of poor self-esteem in pupils with ADHD (Cooper and Shea, 1999; Kewley, 1999, 2005; Cooper and Bilton, 2002). However, there was evidence in each of the six cases of other significant difficulties in the affective domain. The target pupils experienced problems with relationships and social skills, with four boys receiving some extra social skills training in school. Impulsiveness and behavioural inhibition may prevent pupils with ADHD from forming friendships. The findings from the sociometric question included

on the self-esteem questionnaire suggest rejection or being ignored by their peers. In addressing problems associated with discipline in schools, the Elton Report had suggested the inclusion of an affective curriculum (DES, 1989). Hanko (2003) claims that in fact the demands of the National Curriculum

> *"reduced teachers' opportunities to attend to the affective dimension of learning which the Elton committee had emphasised as important for all"* (p.126).

Pupils with ADHD need to be taught some of the basic skills of social interaction, including self-advocacy skills (Cooper and Bilton, 2002). The findings of a small-scale study by Ahonen *et al*. (1994)*"supported the inclusion of affective and motivational components in a remediation programme"* (p.179).

Summary

The chapter has provided a discussion of the methodologies adopted in both parts of the present research before offering a summary of the implications of the findings for key issues. This has involved consideration of current theoretical concerns on the concept of ADHD. Chapter **16** will summarise the main conclusions and offer recommendations for future policy and practice.

Chapter 16

Conclusions and recommendations

One of the key areas where ADHD behaviours can present problems is in the school setting.

> *" … More than any other domain of major life activities, the educational sphere is devastatingly affected by this relatively common disorder"* (DuPaul and Stoner, 2003, Foreword by Barkley, p.ix).

The present two-part research was undertaken from an educational perspective and focused on school settings. The main overall aims were to obtain an overview of the incidence of ADHD in KS1 and KS2 pupils attending schools in an LEA and to explore in-depth the situational variability of ADHD symptoms. The research has been concerned with the generation of hypotheses where patterns of variability have emerged in the identification and incidence of ADHD symptoms and their manifestation across curricular contexts and over time (see Appendix **15.1**). The objectives outlined in Chapter **1** were:

1. to survey the incidence of pupils with ADHD in all primary and first schools within the LEA;
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.

In achieving the objectives of the research, implications of the findings for effective inclusive education for pupils with ADHD have been highlighted and hypotheses generated in five significant areas. A summary of the conclusions and recommendations from the present research is shown below.

Incidence

- At least 0.5% of the total school population in the UK have a diagnosis of ADHD or display many of the characteristics associated with the disorder. These pupils are likely to experience learning, behavioural, social and emotional difficulties in school. Despite differing views on the concept and features of ADHD, this has implications for future planning for the successful inclusion of such pupils in mainstream education.

- The prevalence rates of ADHD are higher at KS1 and KS2. When funding issues are addressed it is important that primary schools in particular have access to sufficient resources to aid them in supporting pupils with ADHD.

Multi-professional identification, assessment and management of ADHD

- *"The Warnock SEN framework is struggling to remain fit for purpose …"* (House of Commons, 2006, p.12). Future SEN strategy should involve an approach based on pupil-centred provision.
- There is a need for increasing the awareness and knowledge of ADHD amongst all professionals involved in the identification and diagnosis of the disorder.
- The highest proportion of pupils is diagnosed with ADHD between the ages of 5 – 9 years. This highlights the need for early intervention, *"the cornerstone of the Government's SEN strategy"* (DfES, 2004a, p.9).
- Closer working between professions should be improved at local level – in particular between the Child and Adolescent Mental Health Service (CAMHS) and education providers (DfES, 2004a; House of Commons, 2006).
- When medication is used in the management of ADHD its use should be carefully monitored and utilised only as part of multi-modal treatment (BPS, 1996, 2000a; Cooper and Bilton, 2002; NICE, 2000, 2006).
- More research is needed into the long-term effects of medication.

School training

- Effective training for teachers and teaching assistants in SEN, and ADHD in particular, is needed.

> *"The Government needs to radically increase investment in training its workforce so that all staff, including teaching staff, are fully equipped and resourced to improve outcomes for children with SEN…"* (House of Commons, 2006, p.7).

Variability in ADHD symptoms

- Pupils with ADHD display approximately 30% more ADHD (off-task) behaviours than their non-ADHD classmates. Changes to conceptualisations of the curriculum are needed. *"Teachers should shape curriculum and assessment according to need and ability"* (Macbeath *et al*., 2006, p.66).

- The positive aspects of ADHD characteristics should be taken into account and built into the delivery and organisation of lessons. *"Children with ADHD perform most effectively when tasks are tailored to harness positive aspects of their characteristics"* (Cooper and Bilton, 2002). This should include a variety of teaching and learning approaches, more use of computer-based tasks, flexibility in grouping and support in the classroom, the use of novelty approaches where appropriate and a combination of proactive and reactive interventions and classroom strategies.
- There is a need for more research on ADHD to be undertaken in school settings.

  > *"It is surprising how few controlled group studies have examined the situational variability of ADHD type behaviours in the natural classroom"* (Lauth *et al*., 2006, p.389).

- The two systematic observation techniques, Fixed Interval Sampling (FIS) and Instantaneous Time Sampling (ITS), have practical applications in investigating and quantifying the behaviour of pupils with ADHD in school. Both techniques could be used to: (1) contribute to the identification of contexts, settings and teaching approaches best suited to helping pupils who display ADHD behaviour to optimise on-task behaviour; (2) facilitate the gathering of practice-based evidence to aid in assessment processes, including SEN statutory assessment and ADHD diagnosis; (3) help in monitoring the effects of medication when it is used as part of multi-modal treatment.

Comorbid and associated difficulties

- More emphasis should be placed on the provision of an affective curriculum in schools. This is particularly important for pupils who display characteristics associated with ADHD in order for them to maintain high levels of self-esteem and to learn appropriate social skills.

The present research has focused on identification and assessment, contextual and curricular variability in boys at KS1 and KS2 in mainstream schools. Where patterns of variability have emerged, testable hypotheses have been generated. Controversy exists around the concept on several levels, including the general abstract concept of the disorder, its manifestations in everyday life and assessment procedures, but the *"evolving concept"* of ADHD cannot be ignored (BPS, 1996, p.8). Improvements in multi-professional approaches to the identification and management of ADHD and pedagogical and curricular flexibility in schools could contribute towards current

government policy on inclusion being turned into practice, and to enabling all children who display ADHD characteristics to achieve the five *Every Child Matters* outcomes (DfES, 2003, 2004a).

Table 6a. Case studies – target pupils database

Name, date of birth	Research stage	NC year	SEN Code of Practice stage	Formal ADHD assess-ment requested	Formal ADHD diagnosis received	Age at diagnosis	Diagnosis made by	Medication	Other types of SEN	Self esteem score (out of 24)	Latest SAT Scores **	School Attendance	Exclusion
Case 1 Ben (2/12/94)	Main phase – first year	3	School Action Plus	Yes		-	-	-	EBD; general learning difficulties	21		95+%	
	Follow up phase – second year	4	School Action Plus	Yes		-	-	-		18	Y4 R – 3a W – 2c M – 2a	95+%	
Case 2 Carl (7/5/93)	Main phase – first year	5	Monitoring statement		Yes	6y 9m	Paediatrician	Concerta - once daily	EBD; specific learning difficulties	15		95+%	
	Follow up phase – second year	6	Statement of SEN		Yes			None		17	Y5 R – 2c W – 2 M – w3	95+%	Several odd days
Case 3 David (8/2/94)	Main phase – first year	4	School Action Plus		Yes	4y 4m	Paediatrician	Concerta - once daily	General learning difficulties	13		84%	
	Follow up phase – second year	5	School Action Plus		Yes			Concerta - once daily		13	Y4 R – 1b W – 1a M – 2a	59%	
Case 4 Edward (9/1/96)	Main phase – first year	2	School Action Plus		Yes	5y	Paediatrician	Ritalin – 3 times a day	EBD; general learning difficulties	16		94%	
	Follow up phase – second year	3	School Action Plus		Yes			Ritalin – 3 times a day		12	Y2 R – 1 W – 1 M -1	94%	Threat at one stage
Case 5 Freddy (9/7/94)	Main phase – first year	4	Statement of SEN	Yes		-	-	-	Severe EBD; general learning difficulties	14		95+%	PRU part time
	Follow up phase – second year	5	Statement of SEN	Yes		-	-	-		10	Y4 R,W - * M – 3c	95+%	PRU part time
Case 6 Adam (21/1/95)	Main phase – first year	3	School Action Plus	Yes		-	-	-	General learning difficulties	12		95+%	
	Follow up phase – second year	4	School Action Plus		Yes	9y 8m	Community paediatrician	Ritalin – 3 times a day		17	Y3 R,W,M – w2	95+%	

****** Standard Assessment Task (SAT) or non-statutory test scores: R = reading, W = writing, M = mathematics, w = working towards, * = not tested

Table 6d. Total observation time, numbers of FIS observation recordings in individual case studies (target pupils)

	Fixed Interval Sampling (FIS) 15-second observation periods								
	Main phase			**Follow up phase**			**Totals**		
	Total observation time	Total observation time (minutes)	Number of recordings	Total observation time	Total observation time (minutes)	Number of recordings	Total observation time	Total observation time (minutes)	Number of recordings
Case 1 Ben	17h 36min	1,056	4,224	21h 48min	1,308	5,232	39h 24min	2,364	9,456
Case 2 Carl	19h 58min	1,198	4,792	25h 12min	1,512	6,048	45h 10min	2,710	10,840
Case 3 David	09h 10min	550	2,200	07h 52min	472	1,888	17h 02min	1,022	4,088
Case 4 Edward	12h 54min	774	3,096	17h 33min	1,053	4,212	30h 27min	1,827	7,308
Case 5 Freddy	19h 52min	1,192	4,768	24h 24min	1,464	5,856	44h 16min	2,656	10,624
Case 6 Adam	23h 00min	1,380	5,520	08h 36min	516	2,064	31h 36min	1,896	7,584
Totals	102h 30min	6,150	24,600	105h 25min	6,325	25,300	207h 55min	12,475	49,900

Number of observation recordings made using FIS (where the individual is closely observed, usually over the course of a lesson, and recordings are made of his predominant behaviour over 15-second periods).

Table 6e. Total observation time, numbers of ITS observation recordings in individual case studies (target pupils and comparison pupils)

	Instantaneous Time Sampling (ITS) Recordings made of behaviour of both case study individuals and (non-ADHD) comparison pupils								
	Main phase			**Follow up phase**			**Totals**		
	Total observation time	Total observation time (minutes)	Number of 'snapshot' recordings	Total observation time	Total observation time (minutes)	Number of 'snapshot' recordings	Total observation time	Total observation time (minutes)	Number of 'snapshot' recordings
Target pupil 1	05hr 50min	350	700	05hr 10min	310	620	11hr 00min	660	1,320
Comparison 1			700			620			1,320
Target pupil 2	06hr 00min	360	720	07hr 10min	430	860	13hr 10min	790	1,580
Comparison 2			720			860			1,580
Target pupil 3	09hr 30min	570	1,140	02hr 00min	120	240	11hr 30min	690	1,380
Comparison 3			1,140			240			1,380
Target pupil 4	09hr 00min	540	1,080	08hr 10min	490	980	17hr 10min	1,030	2,060
Comparison 4			1,080			980			2,060
Target pupil 5	07hr 30min	450	900	05hr 30min	330	660	13hr 00min	780	1,560
Comparison 5			900			660			1,560
Target pupil 6	07hr 50min	470	940	02hr 00min	120	240	09hr 50min	590	1,180
Comparison 6			940			240			1,180
TOTALS	45hr 40min	2,740	10,960	30hr 00min	1,800	7,200	75hr 40min	4,540	18,160

Number of observation recordings made using ITS (where a 'snapshot' of the behaviour of the individual is recorded at 30-second intervals and a comparison is made with a non-ADHD pupil in each case. This type of observation is carried out over a 10-minute period, but often three periods may be recorded in one lesson – at the beginning, middle and end, in order to examine variabilities between ADHD and non-ADHD pupils).

NB. In each LEA a survey was conducted across ***all*** schools. Figures for KS1 and KS2 have been extracted for analysis. **LEA 1** figures include only mainstream pupils, but figures for **LEAs 2, 3, 4, 5a** and **5b** may also include a small number of pupils attending special schools and pupil referral units. There may be other slight inconsistencies due to different questionnaires being used. Variations may also occur due to differing response rates, the size of the school populations, and the dates the surveys were undertaken.

Table 7n. KS1 and KS2 ADHD identified pupils across LEAs

LEA, year survey carried out	Key Stage 1						Key Stage 2										KS1&2 combined	
	Year 1		Year 2		KS1 Total N	* % of total ADHD	Year 3		Year 4		Year 5		Year 6		KS2 Total N	* % of total ADHD	Total N	* % of total ADHD
	Boys	Girls	Boys	Girls			Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls				
LEA 1 2003	15	1	27	2	45	11%	27	2	38	3	40	3	28	2	143	35%	191†	46%
LEA 2 1998 ‡	14		21		35	15%	23		21		26		30		100	43%	135	58%
LEA 3 1998 ‡	15		14		29	12%	41		26		33		44		144	60%	173	72%
LEA 4 1999	9	1	18	1	29	12%	32	2	29	3	29	7	28	0	130	54%	159	66%
LEA5a 2000	20	1	19	2	42	12%	44	3	35	3	32	6	49	3	175	51%	217	63%
LEA5b 2004 ‡	16		30		46	07%	54		49		69		68		240	39%	286	46%

*** The percentage shown represents the percentage of the *total* number of pupils diagnosed with ADHD across *all* schools.**

LEA 1: a rural county in the West Midlands, the LEA in which the present research was carried out. (Response rate for KS1 and KS2 only: 97%).
(† Includes 3 pupils NC Year group not known).
LEA 2: a rural county in South East England. The ADHD questionnaire used by this county in 1998 was adapted for use in the present research.
LEA 3: a large rural and coastal county in South East England (Cains, 2000).
LEA 4: a large mainly rural county in the South West of England (Holowenko and Pashute, 2000).
LEA 5a: a large, densely populated metropolitan county in the North West of England (Evans, 2004).
LEA 5b: Follow-up survey in same LEA as 5a above.

‡ No available gender breakdown for KS1 and KS2. (The ratio across *all* schools was 9:1). The boy: girl ratio at KS1and KS2 in **LEAs 1,4** and **5a** was approximately 9:1.

Table 8e. Combined Fixed Interval Sampling (FIS) observation recordings – Ben (case 1)

(A) Curriculum area, setting, number of observation periods Whole school, n = 423/424 KS2 group, n =180/180 Y group, n = 90/90; Class group, n = 34/33 Lit group, n = 12/14; S&L group, 6; Num group, n = 15/14; Science set, 14	(B) N = total number of recordings made of predominant behaviour over 15-second periods		(C) Breakdown of totals in column B (N and %)											
			'No ADHD' behaviour				ADHD behaviours							
							Inattention				Hyperactivity-impulsivity			
Main phase or follow up phase	**Main phase**	**Follow up phase**	**Main**		**Follow up**		**Main**		**Follow up**		**Main**		**Follow up**	
			N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
All settings (24/25)	4224	5232	2993	71%	3427	66%	427	10%	1107	21%	804	19%	698	13%
Core subjects														
Literacy (group) (9/8)	1700	1516	1345	79%	1047	69%	154	09%	277	18%	201	12%	192	13%
Numeracy (group) (9/8)	1484	1952	948	64%	1420	73%	156	11%	312	16%	380	25%	220	11%
Science (set) (*/2)	*	624	*	*	392	63%	*	*	192	31%	*	*	40	06%
Foundation subjects														
Art **DT**	*	*												
Geography (*/1)	*	140	*	*	54	39%	*	*	59	42%	*	*	27	19%
History (class) (2/*)	432	*	350	81%	*	*	35	08%	*	*	47	11%	*	*
ICT (class) (*/1)	*	280	*	*	226	81%	*	*	23	8%	*	*	31	11%
Music (class) (*/1)	*	272	*	*	98	36%	*	*	122	45%	*	*	52	19%
PE	*	*												
Other														
RE	*	*												
School assembly (*/2) **KS2 assembly** (1/*) **KS2 hymn practice** (2/*) **KS2 harvest festival** (*/1) **KS2 Xmas rehearsal** (1/1)	608	448	350	58%	190	43%	82	13%	122	27%	176	29%	136	30%

** Timetabling precluded access to this curriculum area

Table 8f. Combined Instantaneous Time Sampling (ITS) observation recordings – Ben (case 1)

(A) Curriculum area, setting, number of 10-minute observation periods Whole school, n = 439/443 KS2 group, n = 240/240 Class group, n = 27/26	(B) N = total numbers of recordings out of 20 made at 30-second intervals for target and comparison pupils		(C) Breakdown of figures in column B: N (number of recordings) and percentages											
			'No ADHD' behaviour				ADHD behaviours							
							Inattention				Hyperactivity-impulsivity			
			Target pupil Ben		Comparison pupil Harry		Target pupil Ben		Comparison pupil Harry		Target pupil Ben		Comparison pupil Harry	
Main phase or follow up phase	**Main**	**Follow up**	**Main**	**Follow up**	**Main**	**Follow up**	**Main**	**Follow up**	**Main**	**Follow up**	**Main**	**Follow up**	**Main**	**Follow up**
All settings (35/31)	700	620	357 51%	352 57%	594 85%	507 82%	139 20%	153 25%	72 10%	100 16%	204 29%	115 18%	34 05%	13 02%
Core subjects														
Literacy (class) † (6/*)	120	*	50 42%	*	92 77%	*	28 23%	*	26 22%	*	42 35%	*	02 1%	*
Numeracy †	*	*												
Science (class/group †) (5/*)	100		47 47%	*	78 78%	*	25 25%	*	16 16%	*	28 28%	*	06 06%	*
Foundation subjects														
Art (class) (5/4)	160	140	71 44%	87 62%	136 85%	104 74%	44 28%	38 27%	15 9%	35 25%	45 28%	15 11%	09 6%	01 1%
DT (class) (3/3)														
Geography	*	*												
History (class) (6/6)	120	120	75 63%	79 66%	108 90%	113 94%	11 09%	22 18%	08 7%	06 5%	34 28%	19 16%	04 03%	01 1%
ICT (class) (*/2)	*	40	*	20 50%	*	35 87%	*	17 42%	*	05 13%	*	03 8%	*	0 0
Music (KS2 concert/singing) (3 /3)	60	60	35 58%	39 65%	57 95%	50 84%	10 17%	09 15%	02 3%	05 8%	15 25%	12 20%	01 02%	05 8%
PE	*	*												
Other														
RE (class) (1/3)	20	60	05 25%	29 48%	17 85%	44 73%	06 30%	14 24%	0 0	13 22%	09 45%	17 28%	03 15%	03 5%
Circle time (PSHE) (class) (2/*)	40	*	24 60%	*	39 98%	*	06 15%	*	0 0	*	10 25%	*	01 02%	*
Assembly (2) **Hymn practice** (2/5) **Harvest practice** (3) **Christmas rehearsal** (2)	80	200	50 63%	98 49%	67 84%	161 80%	09 11%	53 27%	05 6%	36 18%	21 26%	49 24%	08 10%	03 2%

** Timetabling precluded access to this curriculum area † lessons generally taught in ability groups

Table 9e. Combined Fixed Interval Sampling (FIS) observation recordings – Carl (case 2)

(A) Curriculum area, setting, number of observation periods Whole school, n = 439/443 KS2 group, n = 240/240 Class group, n = 27/26 Lit group, n = 3 - 5/4 Num group, n = 4 - 7/4	(B) N = total number of recordings made of predominant behaviour over 15-second periods		(C) Breakdown of totals in column B (N and %)											
			'No ADHD' behaviour				ADHD behaviours							
							Inattention				Hyperactivity-impulsivity			
Main phase or follow up phase	**Main phase**	**Follow up phase**	**Main**		**Follow up**		**Main**		**Follow up**		**Main**		**Follow up**	
			N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
All settings (28/33)	4792	6048	2928	61%	4316	71%	1098	23%	1143	19%	766	16%	589	10%
Core subjects														
Literacy (group) (8/9)	1644	2048	1157	70%	1537	75%	264	16%	328	16%	223	14%	183	09%
Numeracy (group) (10/10)	2032	2160	1176	58%	1471	68%	508	25%	447	21%	348	17%	242	11%
Science (class) (2/2)	400	412	240	60%	320	78%	129	32%	59	14%	31	8%	33	08%
Foundation subjects														
Art (class) (1) **DT** (class) (1)	72	140	55	76%	124	88%	15	21%	12	09%	02	03%	04	03%
Geography	*	*												
History	*	*												
ICT (class) (2)	*	164	*	*	123	75%	*	*	33	20%	*	*	08	05%
Music (half class) (1/1)	80	92	65	81%	54	59%	08	10%	27	29%	07	09%	11	12%
PE (class) (2/2)	180	232	78	43%	152	66%	55	31%	64	27%	47	26%	16	07%
Other														
RE (class) (2/1)	212	208	101	47%	130	62%	63	30%	47	23%	48	23%	31	15%
PSHE (class) (2)	*	200	*	*	146	73%	*	*	29	15%	*	*	25	12%
School assembly (1/2) **KS2 assembly** (1/1) **KS2 Xmas rehearsal** (1)	172	392	56	33%	259	66%	56	33%	97	25%	60	34%	36	09%

** Timetabling precluded access to this curriculum area

Table 9f. Combined Instantaneous Time Sampling (ITS) observation recordings – Carl (case 2)

(A) Curriculum area, setting, number of 10-minute observation periods Whole school, n = 439/443 KS2 group, n = 240/240 Class group, n = 27/26	(B) N = total numbers of recordings out of 20 made at 30-second intervals for target and comparison pupils		(C) Breakdown of figures in column B: N (number of recordings) and percentages											
			'No ADHD' behaviour				ADHD behaviours							
							Inattention				Hyperactivity-impulsivity			
			Target pupil Carl		Comparison pupil Ian		Target pupil Carl		Comparison pupil Ian		Target pupil Carl		Comparison pupil Ian	
Main phase or follow up phase	**Main**	**Follow up**	**Main**	**Follow up**	**Main**	**Follow up**	**Main**	**Follow up**	**Main**	**Follow up**	**Main**	**Follow up**	**Main**	**Follow up**
All settings (36/43)	720	860	390 54%	461 54%	577 80%	729 85%	183 25%	253 29%	106 15%	110 13%	147 21%	146 17%	37 5%	21 02%
Core subjects														
Literacy (class) † (2/4)	40	80	07 17%	35 44%	32 80%	68 85%	18 45%	34 43%	05 13%	10 12%	15 38%	11 13%	03 07%	02 03%
Numeracy (class) † (1/*)	20	*	12 60%	*	16 80%	*	06 30%	*	04 20%	*	02 10%	*	0 0	*
Science (class) (3/9)	60	180	17 28%	109 61%	45 75%	154 86%	21 35%	45 25%	10 17%	22 12%	22 37%	26 14%	05 08%	04 02%
Foundation subjects														
Art (class) (6/6) **DT** (class) (6/1)	240	140	175 73%	84 60%	205 85%	128 91%	44 18%	31 22%	30 13%	09 07%	21 9%	25 18%	05 02%	03 02%
Geography	*	*												
History (class) (8/8)	160	160	90 56%	85 53%	124 78%	126 79%	40 25%	50 31%	28 17%	30 19%	30 19%	25 16%	08 05%	04 03%
ICT (class) (*/5)	*	100	* *	47 47%	*	91 91%	*	34 34%	*	07 07%	* *	19 19%	* *	02 02%
Music (half class) (2/3)	40	60	21 53%	34 56%	33 83%	54 90%	12 30%	13 22%	05 12%	06 10%	07 17%	13 22%	02 05%	0 0
PE (class) (2/2)	40	40	28 70%	14 35%	33 83%	28 70%	10 25%	11 28%	04 10%	07 18%	02 05%	15 37%	03 07%	05 12%
Other														
RE	*	*												
KS2 assembly (hall) (4/1) **KS2 singing practice** (hall) (2/2)	120	60	40 33%	22 37%	89 74%	45 75%	32 27%	28 46%	20 17%	14 23%	48 40%	10 17%	11 09%	01 02%
Ofsted questionnaire (class) (*/2)	*	40	* *	31 78%	*	35 88%	*	07 17%	*	05 12%	* *	02 5%	*	0 0

** Timetabling precluded access to this curriculum area † lessons generally taught in ability groups

Table 10g. Combined Fixed Interval Sampling (FIS) observation recordings – David (case 3)

(A) Curriculum area, setting, number of observation periods †Whole school, n = 207/540 Class group, n = 28/30 ††Learning Support Base (LSB) and Nurture group (NG), n = 6-8 Lit set, n = 12 Num set, n = 28	(B) N = total number of recordings made of predominant behaviour over 15-second periods		(C) Breakdown of totals in column B (N and %)											
			'No ADHD' behaviour				ADHD behaviours							
							Inattention				Hyperactivity-impulsivity			
Main phase or follow up (†) phase	**Main phase**	**Follow up phase**	**Main**		**Follow up**		**Main**		**Follow up**		**Main**		**Follow up**	
			N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
All settings (13/11)	2200	1888	1777	81%	1366	73%	231	10%	383	20%	192	09%	139	07%
Core subjects														
Literacy (LSB/ability set) (2/2)	376	384	311	83%	317	82%	22	06%	61	16%	43	11%	06	02%
Literacy (class) (2/*)	380	*	270	71%	*	*	72	19%	*	*	38	10%	*	*
Numeracy (ability set) (*/4)	*	732	*	*	413	57%	*	*	214	29%	*	*	105	14%
Numeracy (class) (3/*)	660	*	550	84%	*	*	55	08%	*	*	55	08%	*	*
Science	*	*												
Foundation subjects														
Art (class) (1/1) **DT** (*/*)	140	208	104	74%	178	86%	23	17%	29	14%	13	09%	01	0
Geography (*/*)														
History (class) (1/*)	140	*	92	66%	*	*	32	23%	*	*	16	11%		
ICT (LSB/class) (1/1)	80	180	78	98%	134	74%	0	0	30	17%	02	02%	16	09%
Music (class) (*/1)	*	208	*	*	171	82%	*	*	32	15%	*	*	05	03%
PE (class) (*/1)	*	108	*	*	94	87%	*	*	09	08%	*	*	05	05%
Other														
RE	*	*												
Social skills (NG) (2)	360	-	319	89%	-	-	23	06%	-	-	18	05%	-	-
School assembly (1/1)	64	68	53	83%	59	87%	04	06%	08	12%	07	11%	01	01%

** Timetabling precluded access to this curriculum area †Low number of observations due to David's poor attendance

†Main phase - school 3; follow up phase, school 7. Different arrangements applied for teaching of literacy and numeracy.

†† During the main phase David attended two sessions per week in the LSB for literacy lessons and two social skills sessions per week in the nurture group.

Table 10h. Combined Instantaneous Time Sampling (ITS) observation recordings – David (case 3)

(A) Curriculum area, setting, number of 10-minute observation periods †Whole school, n = 207/540 Class group, n = 28/30 Y4 group, n = 35	(B) N = total numbers of recordings out of 20 made at 30-second intervals for target and comparison pupils		(C) Breakdown of figures in column B: N (number of recordings) and percentages											
			'No ADHD' behaviour				ADHD behaviours							
							Inattention				Hyperactivity-impulsivity			
			Target pupil David		Comparison pupil John/Mark		Target pupil David		Comparison pupil John/Mark		Target pupil David		Comparison pupil John/Mark	
Main phase or follow up phase #	**Main**	**Follow up**	**Main**	**Follow up**	**Main**	**Follow up**	**Main**	**Follow up**	**Main**	**Follow up**	**Main**	**Follow up**	**Main**	**Follow up**
All settings (57/12)	1140	240	767 67%	139 58%	950 83%	204 85%	195 17%	90 38%	143 13%	36 15%	178 16%	11 4%	47 04%	0 0
Core subjects														
Literacy (class/Y4 group) (18/*)	360	*	226 63%	*	302 84%	*	65 18%	*	42 12%	*	69 19%	*	16 4%	*
Numeracy (class/Y4 group) (21/*)	420	*	284 68%	*	345 82%	*	76 18%	*	62 15%	*	60 14%		13 03%	*
Science (class) (3/3)	60	60	28 46%	29 48%	41 68%	53 88%	16 27%	26 44%	13 22%	07 12%	16 27%	05 08%	06 10%	0 0
Foundation subjects														
Art (class) (3/*)	140	60	108 77%	40 67%	114 81%	55 92%	15 11%	17 28%	19 14%	05 08%	17 12%	03 05%	07 05%	0 0
DT (class) (4/3)														
Geography	*	*												
History (class) (2/*)	40	*	36 90%	*	40 100%	*	04 10%	*	0 0	*	0 0	*	0 0	*
ICT	*	*												
Music (class) (*/3)	*	60	*	40 67%	*	50 83%	*	20 33%	*	10 17%	*	0 0	*	0 0
PE	*	*												
Other														
RE (class) (*/3)	*	60	*	30 50%	*	46 77%	*	27 45%	*	14 23%	*	03 05%	*	0 0
PSHE (class) (2/*)	40	*	36 90%	*	36 90%	*	0 0	*	0 0	*	04 10%	*	04 10%	*
School assembly (4/*)	80	*	49 61%	*	72 90%	*	19 24%	*	07 9%	*	12 15%	*	01 01%	*

† Main phase, school 3; follow up phase, school 7

Low number of observations due to David's poor attendance

** Timetabling precluded access to this curriculum area

Table 11e. Combined Fixed Interval sampling (FIS) observation recordings – Edward (case 4)

(A) **Curriculum area, setting, number of observation periods** Whole school, n = 130/130 KS2 group, n = 55/55 Class group, 30/31 SEN Lit group, n = 9 ALS literacy group, n = 4	**(B)** **N = total number of recordings made of predominant behaviour over 15-second periods**		**(C)** **Breakdown of totals in column B (N and %)**											
			'No ADHD' behaviour				**ADHD behaviours**							
							Inattention				**Hyperactivity-impulsivity**			
Main phase or follow up phase	**Main phase**	**Follow up phase**	**Main**		**Follow up**		**Main**		**Follow up**		**Main**		**Follow up**	
			N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
All settings (26/27)	3096	4212	1875	61%	2305	55%	832	27%	1333	32%	389	12%	574	13%
Core subjects														
Literacy (group) (1/1)	180	120	130	72%	90	75%	28	16%	27	23%	22	12%	03	02%
Literacy (class) (6/7)	868	1464	583	67%	894	61%	227	26%	477	33%	58	07%	93	06%
Numeracy (class) (5/3)	728	540	290	40%	196	36%	263	36%	286	53%	175	24%	58	11%
Science (1/*)	108	*	42	39%	*	*	48	44%	*	*	18	17%	*	*
Foundation subjects														
Art (class) (2/1) **DT** (class) (*/1)	220	396	158	72%	198	50%	40	18%	181	46%	22	10%	17	04%
Geography (class) (*/1)	*	272	*	*	72	26%	*	*	65	24%	*	*	135	50%
History (class) (*/1)	*	60	*	*	50	83%	*	*	08	13%	*	*	02	04%
ICT (class) (1/2)	160	352	111	69%	255	72%	46	29%	67	19%	03	02%	30	09%
Music (class) (1/1)	76	140	65	86%	0	0	07	09%	14	10%	04	05%	126	90%
PE (class) (2/4)	340	544	248	73%	337	62%	72	21%	150	28%	20	06%	57	10%
Other														
RE (class) (2/*)	140	*	90	64%	*	*	30	22%	*	*	20	14%	*	*
School assembly (5/3) **KS2 assembly** (*/2)	276	324	158	57%	213	66%	71	26%	58	18%	47	17%	53	16%

** Timetabling precluded access to this curriculum area

Table 11f. Combined Instantaneous Time Sampling (ITS) observation recordings – Edward (case 4)

(A) Curriculum area, setting, number of 10-minute observation periods Whole school, n = 130/130 Class group, n = 30/31	(B) N = total numbers of recordings out of 20 made at 30-second intervals for target and comparison pupils		(C) Breakdown of figures in column B: N (number of recordings) and percentages											
			'No ADHD' behaviour				ADHD behaviours							
							Inattention				Hyperactivity-impulsivity			
			Target pupil Edward		Comparison pupil Keith		Target pupil Edward		Comparison pupil Keith		Target pupil Edward		Comparison pupil Keith	
Main phase or follow up phase	**Main**	**Follow up**	**Main**	**Follow up**	**Main**	**Follow up**	**Main**	**Follow up**	**Main**	**Follow up**	**Main**	**Follow up**	**Main**	**Follow up**
All settings (54/49)	1080	980	497 46%	507 52%	941 87%	860 88%	359 33%	301 31%	131 12%	113 11%	224 21%	172 17%	08 01%	07 01%
Core subjects														
Literacy (class) (21/18)	420	360	181 43%	219 61%	356 85%	316 88%	126 30%	89 25%	62 15%	40 11%	113 27%	52 14%	02 00%	04 01%
Numeracy (class) (15/11)	300	220	124 41%	88 40%	262 87%	194 88%	111 37%	90 41%	34 12%	26 12%	65 22%	42 19%	04 01%	0 0
Science (class) (4/*)	80	*	30 37%	*	68 85%	*	43 54%	*	12 15%	*	07 09%	*	0 0	*
Foundation subjects														
Art (class) (3/3)	60	60	29 48%	31 52%	50 83%	58 97%	30 50%	21 35%	10 17%	02 03%	01 02%	08 13%	0 0	0 0
DT	*	*												
Geography	*	*												
History	*	*												
ICT (class) (*/2)	*	40	*	35 88%	*	37 93%	*	05 12%	*	02 05%	*	0 0	*	01 02%
Music (class) (*/3)	*	60	*	21 35%	*	47 78%	*	27 45%	*	12 20%	*	12 20%	*	01 02%
PE (class) (3/2)	60	40	29 48%	14 35%	56 93%	38 95%	19 32%	08 20%	04 07%	02 05%	12 20%	18 45%	0 0	0 0
Other														
RE (class) (3/4)	60	80	40 67%	48 60%	55 91%	68 85%	09 15%	20 25%	04 07%	11 14%	11 18%	12 15%	01 02%	01 01%
School assembly (3/3) **Singing practice** (2/3)	100	120	64 64%	51 43%	94 94%	102 85%	21 21%	41 34%	05 05%	18 15%	15 15%	28 23%	01 01%	0 0

** Timetabling precluded access to this curriculum area

Table 12e. Combined Fixed Interval Sampling (FIS) observation recordings – Freddy (case 5)

(A) Curriculum area, setting, number of observation periods †Whole school, n = 140/498 KS2 group, n = 248; Y5, n = 128 Class group, n = 29/32 Nurture group, n = 15 Literacy set, n = 15 Numeracy group/set, n = 22/21	(B) N = total number of recordings made of predominant behaviour over 15-second periods		(C) Breakdown of totals in column B (N and %)											
			'No ADHD' behaviour				ADHD behaviours							
							Inattention				Hyperactivity-impulsivity			
Main phase or follow up phase	**Main phase**	**Follow up phase**	**Main**		**Follow up**		**Main**		**Follow up**		**Main**		**Follow up**	
			N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
All settings (28/33)	4768	5856	3013	63%	3752	64%	1087	23%	1222	21%	668	14%	882	15%
Core subjects														
Literacy (NG/set) (10/9)	1984	1468	1263	64%	943	64%	496	25%	307	21%	225	11%	218	15%
Numeracy (group+1NG) (6/4)	1096	776	610	57%	556	72%	269	24%	128	16%	217	19%	92	12%
Science (class) (*/3)	*	560	*	*	353	63%	*	*	121	22%	*	*	86	15%
Foundation subjects														
Art (NG/class) (2/4) **DT** (class) (*/3)	388	1252	287	74%	844	67%	68	18%	261	21%	33	8%	147	12%
Geography (class) (*/1)	*	188	*	*	127	68%	*	*	28	15%	*	*	33	17%
History (class) (1/1)	320	224	193	60%	162	72%	71	22%	37	17%	56	18%	25	11%
ICT (class) (1/1)	80	200	74	92%	130	65%	03	04%	40	20%	03	04%	30	15%
Music (NG/class) (1/2)	104	412	74	71%	119	29%	14	13%	156	38%	16	16%	137	33%
PE (class) (1/1)	120	188	84	70%	174	93%	20	17%	09	05%	16	13%	05	02%
Other														
RE (class) (1/1)	100	208	37	37%	132	63%	34	34%	50	24%	29	29%	26	13%
PSHE (NG/class) (3/1)	416	180	262	63%	92	51%	87	21%	52	29%	67	16%	36	20%
Golden time (NG) (1/*)	100	*	88	88%	*	*	11	11%	*	*	01	01%	*	*
Y5 assembly (*/1)	*	80	*	*	59	74%	*	*	11	14%	*	*	10	12%
School hymn practice (1/*) **KS2 assembly** (*/1)	60	120	41	68%	61	51%	14	23%	22	18%	05	09%	37	31%

** Timetabling precluded access to this curriculum area

† Main phase - school 5; follow up phase, school 8

NG Freddy was in nurture group for all literacy, some numeracy and some other lessons in the main phase and ability sets for literacy & numeracy in the follow up phase

NB - for most of the Y4 class lessons, Freddy had an individual SSA in the main phase. In the follow up phase he received individual TA support for many curriculum areas.

Table 12f. Combined Instantaneous Time Sampling (ITS) observation recordings – Freddy (case 5)

(A) Curriculum area, setting, number of 10-minute observation periods †Whole school, n = 140/498 Class group, n = 29/32 KS2 group, n = 248 Numeracy group, n = 21	(B) N = total numbers of recordings out of 20 made at 30-second intervals for target and comparison pupils		(C) Breakdown of figures in column B: N (number of recordings out of 20) and percentages											
			'No ADHD' behaviour				ADHD behaviours							
							Inattention				Hyperactivity-impulsivity			
			Target pupil Freddy		Comparison pupil Lewis/Neil		Target pupil Freddy		Comparison pupil Lewis/Neil		Target pupil Freddy		Comparison pupil Lewis/Neil	
Main phase or follow up phase	**Main**	**Follow up**	**Main**	**Follow up**	**Main**	**Follow up**	**Main**	**Follow up**	**Main**	**Follow up**	**Main**	**Follow up**	**Main**	**Follow up**
All settings (45/33)	900	660	523 58%	413 63%	832 92%	586 89%	219 24%	133 20%	67 08%	70 10%	158 18%	114 17%	01 0	04 01%
Core subjects														
Literacy	*	*												
Numeracy (class/group) (3/12)	60	240	28 46%	154 64%	55 92%	216 90%	16 27%	51 21%	05 08%	23 9%	16 27%	35 15%	0 0	01 01%
Science (class) (3/5)	60	100	43 72%	54 54%	57 95%	86 86%	12 20%	20 20%	03 05%	12 12%	05 08%	26 26%	0 0	02 02%
Foundation subjects														
Art (class) (6/7)	120	140	77 64%	89 63%	106 88%	130 93%	27 23%	29 21%	14 12%	09 06%	16 13%	22 16%	0 0	01 01%
DT	*	*												
Geography (class) (1/*)	20	*	07 35%	*	16 80%	*	09 45%	*	04 20%	*	04 20%	*	0 0	*
History (class) (9/*)	180	*	125 69%	*	174 97%	*	33 19%	*	06 03%	*	22 12%	*	0 0	*
ICT (class) (2/*)	40	*	30 75%	*	36 90%	*	06 15%	*	04 10%	*	04 10%	*	0 0	*
Music	*	*												
PE (class) (4/*)	80	*	43 54%	*	76 95%	*	19 24%	*	04 05%	*	18 22%	*	0 0	*
Other														
RE (class) (7/3)	140	60	71 51%	13 22%	122 87%	42 70%	46 33%	20 33%	17 11%	18 30%	23 16%	27 45%	01 02%	0 0
Leavers' assembly practice (class) (6/*)	120	*	53 44%	*	112 93%	*	31 26%	*	08 07%	*	36 30%	*	0 0	*
Visit from firemen (class) (*/4)	*	80	*	69 86%	*	74 93%	*	09 11%	*	06 7%	*	02 03%	*	0 0
Assembly (2/*) **Hymn practice** (2/*) **KS2 assembly** (*/2)	80	40	46 57%	34 85%	78 98%	38 95%	20 25%	04 10%	02 02%	02 05%	14 18%	02 05%	0 0	0 0

** Timetabling precluded access to this curriculum area

† Main phase - school 5; follow up phase, school 8

Table 13e. Combined Fixed Interval Sampling (FIS) observation recordings – Adam (case 6)

(A) Curriculum area, setting, number of observation periods Whole school, n = 398/403 KS2 group, n = 240/240 Class group, n = 30/30 Lit group, n = 7/6 Num group, n = 9/8	(B) N = total number of recordings made of predominant behaviour over 15-second periods		(C) Breakdown of totals in column B (N and %)											
			'No ADHD' behaviour				ADHD behaviours							
							Inattention				Hyperactivity-impulsivity			
Main phase or follow up† phase	**Main phase**	**Follow up phase**	**Main**		**Follow up**		**Main**		**Follow up**		**Main**		**Follow up**	
			N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
All settings (30/10)	5520	2064	3572	65%	1511	73%	1365	25%	466	23%	583	10%	87	04%
Core subjects														
Literacy (group) (9/4)	1964	1012	1452	74%	741	73%	348	18%	230	23%	164	08%	41	04%
Numeracy (group) (10/4)	2068	776	1456	70%	568	73%	472	23%	172	22%	140	07%	36	05%
Science	*	*												
Foundation subjects														
Art	*	*												
DT (class) (1/*)	160	*	90	56%	*	*	33	21%	*	*	37	23%	*	*
Geography	*	*												
History (class) (1/*)	220	*	61	28%	*	*	95	43%	*	*	64	29%	*	*
ICT (class) (1/*)	212	*	87	41%	*	*	100	47%	*	*	25	12%	*	*
Music	*	*												
PE (class) (2/1)	300	164	148	49%	131	80%	107	36%	30	18%	45	15%	03	02%
Other														
RE (class) (1/*)	140	*	91	65%	*	*	34	24%	*	*	15	11%	*	*
School assembly (1/*) **KS2 assembly** (4/1)	456	112	187	41%	71	63%	176	39%	34	31%	93	20%	07	06%

† not a full length follow up case study as Adam's family moved abroad

** Timetabling precluded access to this curriculum area in some cases

Table 13f. Combined Instantaneous Time Sampling (ITS) observation recordings – Adam (case 6)

(A) Curriculum area, setting, number of 10-minute observation periods Whole school, n = 398/403 KS2 group, n = 240/240 Class group, n = 30/30	(B) N = total numbers of recordings out of 20 made at 30-second intervals for target and comparison pupils		(C) Breakdown of figures in column B: N (number of recordings) and percentages											
			'No ADHD' behaviour				ADHD behaviours							
							Inattention				Hyperactivity-impulsivity			
			Target pupil Adam		Comparison pupil George		Target pupil Adam		Comparison pupil George		Target pupil Adam		Comparison pupil George	
Main phase or follow up phase †	**Main**	**Follow up**	**Main**	**Follow up**	**Main**	**Follow up**	**Main**	**Follow up**	**Main**	**Follow up**	**Main**	**Follow up**	**Main**	**Follow up**
All settings (47/12)	940	240	481 51%	107 45%	825 88%	207 86%	258 28%	100 42%	81 09%	29 12%	201 21%	33 13%	34 03%	04 02%
Core subjects														
Literacy (class) (1/*)	20	*	08 40%	*	18 90%	*	09 45%	*	0 0	*	03 15%	*	02 10%	*
Numeracy	*	*												
Science (class) (4/*)	80	*	38 48%	*	73 91%	*	26 32%	*	06 08%	*	16 20%	*	01 01%	*
Foundation subjects														
Art (class) (6/*)	120	*	75 63%	*	111 93%	*	27 22%	*	08 06%	*	18 15%	*	01 01%	*
DT	*	*												
Geography	*	*												
History (class) (9/3)	180	60	91 51%	32 53%	156 87%	49 82%	48 27%	21 35%	17 09%	10 17%	41 22%	07 12%	07 04%	01 01%
ICT (class) (3/*)	60	*	34 56%	*	51 85%	*	13 22%	*	09 15%	*	13 22%	*	0 0	*
Music	*	*												
PE (class) (7/*)	140	*	72 51%	*	128 91%	*	45 32%	*	12 09%	*	23 17%	*	0 0	*
Other														
RE (class) (6/4)	120	80	59 49%	27 34%	107 89%	71 89%	36 30%	40 50%	07 06%	07 09%	25 20%	13 16%	06 05%	02 02%
KS2 watch Y6 performance (2/*)	40	*	32 80%	*	38 95%	*	05 13%	*	02 05%	*	03 07%	*	0 0	*
Assembly (4/*) **Hymn practice** (*/3) **KS2 assembly** (5/2)	180	100	72 40%	48 48%	143 79%	87 87%	49 27%	39 39%	20 11%	12 12%	59 33%	13 13%	17 10%	01 01%

† not a full length follow up case study as Adam's family moved abroad

** Timetabling precluded access to this curriculum area in some cases

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APPENDICES

Appendices

Chapter 13 – Case study 6

Chapter 14

Chapter 15

CD Documents (see CD inside back cover)

It is recommended that these large documents, particularly the Excel databases, are treated as 'view only' and read on a computer.

Document CD1	Schools database - 2003 ADHD survey
Document CD2	Coding keys for schools database
Document CD3	Report of 2003 ADHD Survey
Document CD4	Comparison between LEA 1 and LEA 2 ADHD surveys
Document CD5	Report of KS1/KS2 study

Appendix 1.1

Research timetable

	2001 - 2			2002 - 3			2003 - 4			2004 - 5			2005 - 6		
	Autumn term	Spring term	Summer term	Autumn term	Spring term	Summer term	Autumn term	Spring term	Summer term	Autumn term	Spring term	Summer term	Autumn term	Spring term	Summer term
Literature review															
Pilot case study															
Part 1- survey															
Survey preparation															
Survey procedure															
Survey data analysed															
Survey report disseminated															
Further data analysis															
Part 2 – case studies															
Main phase case studies 1 and 2															
Main phase case studies 3 and 4															
Main phase case studies 5 and 6															
Follow up case studies 1, 2, 6															
Follow up case studies 3 and 4															
Follow up case study 5															
Data analysis															

Appendix 2.1

Internet searches (using Google search engine). Includes number of references on DfES website

		4/12/04	2/3/05	11/6/05	30/10/05	22/1/06	2/5/06
"ADHD"	www	1,710,000	5,960,000	8,560,000	13,100,000	15,800,000	42,000,000
	UK	55,900	201,000	402,000	1,080,000	988,000	1,220,000
	DfES	45	86	100	100+	100+	100+
"identification ADHD"	www	59,200	204,000	350,000	1,060,000	967,000	1,130,000
	UK	2,740	10,100	114,000	446,000	395,000	55,700
	DfES	15	17	8	8	8	3
"treatment ADHD"	www	591,000	2,080,000	2,520,000	5,100,000	4,900,000	17,200,000
	UK	30,800	125,000	180,000	663,000	598,000	591,000
	DfES	20	16	7	7	6	11
"intervention ADHD"	www	92,500	304,000	702,000	1,200,000	1,240,000	2,450,000
	UK	4,940	14,400	19,000	98,300	109,000	98,500
	DfES	26	43	100	23	39	23
"variability ADHD symptoms"	www	5,680	18,700	31,000	70,800	71,400	120,000
	UK	440	554	591	679	791	861
	DfES	0	1	0	0	0	0

Internet searches (using Alltheweb). Shows percentage of items in the English language and other languages

		17/12/04	2/3/05	11/6/05	30/10/05	22/1/06	2/5/06
"ADHD"	All lang	1,910,000	3,910,000	7,100,000	20,100,000	19,700,000	11,900,000
	English	1,650,000 86%	3,320,000 85%	6,590,000 93%	18,600,000 93%	18,500,000 94%	10,900,000 92%
	Others	260,000	590,000	510,000	1,500,000	1,200,000	1,000,000
"identification ADHD"	All lang	65,400	123,000	197,000	596,000	540,000	381,000
	English	62,200 95%	121,000 98%	195,000 99%	589,000 99%	526,000 97%	376,000 99%
	Others	3,200	2,000	2,000	7,000	14,000	5,000
"treatment ADHD"	All lang	748,000	1,420,000	2,840,000	6,230,000	5,960,000	4,780,000
	English	737,000 99%	1,400,000 99%	2,820,000 99%	6,190,000 99%	5,910,000 99%	4,740,000 99%
	Others	11,000	20,000	20,000	40,000	50,000	40,000
"intervention ADHD"	All lang	151,000	292,000	414,000	991,000	996,000	645,000
	English	148,000 98%	286,000 98%	408,000 99%	970,000 98%	977,000 98%	633,000 98%
	Others	3,000	6,000	6,000	21,000	19,000	12,000
"variability ADHD symptoms"	All lang	10,900	21,700	19,200	52,200	54,500	37,100
	English	10,900 100%	21,500 99%	19,000 99%	51,700 99%	53,800 99%	36,700 99%
	Others	0	200	200	500	700	400

Internet references using Google Scholar

(identified by Google as *"the most relevant research across the world of scholarly resources"*)

	ADHD	**identification** (of) **ADHD**	**treatment** (of) **ADHD**	**intervention** (for) **ADHD**	**variability** (in) **ADHD symptoms**
9/5/06	116,000	7,960	17,500	10,600	3,360
3/8/06	123,000	8,420	18,400	11,200	3,580
1/10/06	143,000	9,190	20,800	12,000	3,990
23/12/06	157,000	9,840	23,000	13,000	4,170

Appendix 3.1

Comparison of stages of assessment of ADHD in schools in UK and USA

UK	USA
Legislation, ADHD Current government legislation makes no specific reference to ADHD as a category of SEN, but under the heading of BESD the 2001 SEN Code of Practice refers to "children…who are… hyperactive and lack concentration; …those presenting challenging behaviours arising from other complex special needs…" (7.60) (see Cooper & Bilton, 2002, p.32). Cooper and Bilton also point out the Code's reference to medical conditions. Although "medical diagnosis … does not necessarily imply SEN" (7.64), "medical conditions may have a significant impact on a child's experiences and the way they function in school" (7.65).	**Legislation, ADHD** Although ADHD is not recognised in federal guidelines as a classification category, students with ADHD diagnosis may qualify for special education services in one of three ways: • Child with ADHD and another 'disability' (e.g. learning disability) could qualify under one of the existing categories. • Eligible under 'Other Health Impaired' (OHI) category "if problems of limited alertness negatively affect academic performance" (Reid and Maag, 1994, p.339). • Child with ADHD could be considered in need of individualised intervention on basis of being 'handicapped' in accordance with Section 504 of the federal Rehabilitation Act, 1973 (DuPaul and Stoner, 2003)
Inclusion The "emphasis on meeting all children's individual needs in the mainstream curriculum is central to the inclusive ethos underpinning the Code" (Cooper and Bilton, p.33).	**Inclusion** " … the preference is for placement and treatments considered to be least restrictive. In fact, most children with ADHD are placed primarily within regular classroom settings" (DuPaul and Stoner, p.52).
School Action Triggered by concerns from teacher, SENCO, parent or others about child's educational progress, backed up by evidence. These concerns are addressed through the resources of the mainstream school, involving SENCO where necessary. Details of interventions are recorded in individual education plan (IEP).	**Stage 1 - Screening** • Teacher ratings of ADHD symptoms
School Action Plus Involvement of external, specialist support services. They advise on new IEPs, provide specialist assessment and advice on intervention (Cooper and Bilton, 2002).	**Stage 2 - Multimethod assessment of ADHD** • Parent and teacher interviews • Reviews of school records • Behaviour rating scales • Observations of school behaviour • Academic performance data
Statutory assessment May be requested by parents or school if child demonstrates significant cause for concern (if they have not already done so, parents may themselves seek a medical assessment at this stage). LEA assess child's needs which may fall into at least one of four areas: • communication and interaction • cognition and learning • behaviour, emotional and social development • sensory and/or physical.	**Stage 3 - Interpretation of results** • Number of ADHD symptoms • Deviance from age and gender norms • Age of onset and chronicity • Pervasiveness across situations • Degree of functional impairment • Rule out other disorders
Statement of SEN After consideration of evidence, the LEA decides on appropriate provision for the individual child. This might be: • that the school could reasonably be expected to make such provision from within its own resources through School Action Plus • that the nature of the provision suggests that the LEA should formally identify in a statement of the child's needs and the full range of provision to be made. This might include a change of placement.	**Stage 4 - Develop treatment plan** Based upon: • Severity of ADHD symptoms • Functional analysis of behaviour • Presence of associated disorders • Response to prior treatment • Community-based resources
	Stage 5 - Assessment of treatment plan • Periodic collection of Assessment Data • Revision of Treatment Plan

Appendix 3.2

Diagnostic Criteria for Hyperkinetic Syndrome

A. Demonstrate abnormality of attention and activity at *home*, for the age and developmental level of the child, as evidenced by at least three of the following attention problems.
   1. Short duration to spontaneous activities.
   2. Often leaving play activities unfinished.
   3. Overfrequent changes between activities.
   4. Undue lack of persistence at tasks set by adults.
   5. Unduly high distractibility during study (e.g. homework or reading assignment);

   and by at least two of the following:
   6. Continuous motor restlessness (running, jumping, etc.).
   7. Markedly excessive fidgeting or wriggling during spontaneous activities.
   8. Markedly excessive activity in situations expecting relative stillness (e.g. mealtimes,, travel, visiting church).
   9. Difficulty in remaining seated when required.

B. Demonstrate abnormality of attention and activity at *school* or *nursery* (if applicable), for the age and developmental level of the child, as evidenced by at least two of the following attention problems.
   1. Undue lack of persistence at tasks.
   2. Undue high distractibility, i.e., often orienting towards extrinsic stimuli.
   3. Overfrequent changes between activities when choice is allowed.
   4. Excessively short duration of play activities;

   and by at least two of the following activity problems:
   5. Continuous and excessive motor restlessness (running, jumping, etc.) in school.
   6. Markedly excessive fidgeting or wriggling in structured situation.
   7. Excessive levels of off-task activity during tasks.
   8. Unduly often out of seat when required to be sitting.

C. Directly observed abnormality of attention or activity. This must be excessive for the child's age and developmental level. The evidence may be any of the following.
   1. Direct observation of the criteria in A or B above, i.e., not solely the report of parent and/or teacher.
   2. Observation of abnormal levels of motor activity, or off-task behaviour, or lack of persistence in activities, in a setting outside home or school (e.g. clinic or laboratory).
   3. Significant impairment of performance on psychometric test of attention.

D. Does not meet criteria for pervasive development disorder, mania, depressive or anxiety disorder.

E. Onset before age of 6 years.

F. Duration of at least 6 months.

G. IQ above 50.

The research diagnosis of Hyperkinetic disorder requires the definite presence of abnormal levels of inattention and restlessness that are pervasive across situations and persistent over time, that can be demonstrated by direct observation, and that are not caused by other disorders such as autism or affective disorders.

Eventually, assessment instruments should develop to the point where it is possible to take a quantitative cut-off score on reliable, valid and standardised measures of hyperactive behaviour in the home and classroom, corresponding to the 95th percentile on both measures. Such criteria would then replace A and B above.

(From the *International Classification of Diseases* (10th ed.) (1990) Geneva: World Health Organisation).

Appendix 3.3

Diagnostic Criteria for Attention Deficit/Hyperactivity Disorder

A. Either (1) or (2):

(1) Six (or more) of the following symptoms of **inattention** have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level.

Inattention

(a) Often fails to give close attention to details or makes careless mistakes in school, work or other activities.
(b) Often has difficulty sustaining attention in tasks or play activities.
(c) Often does not seem to listen when spoken to directly.
(d) Often does not follow through on instructions and fails to finish schoolwork, chores or duties in the workplace (not due to oppositional behaviour or failure to understand instructions).
(e) Often has difficulty organising tasks and activities.
(f) Often avoids, dislikes or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework).
(g) Often loses things necessary for tasks or activities (e.g. toys, school assignments, pencils, books or tools).
(h) Is often easily distracted by extraneous stimuli.
(i) Is often forgetful in daily activities.

(2) Six (or more) of the following symptoms of **hyperactivity-impulsivity** have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level.

Hyperactivity

(a) Often fidgets with hands or feet or squirms in seat.
(b) Often leaves seat in classroom or in other situations in which remaining seated is expected.
(c) Often runs about or climbs excessively in situations in which it is inappropriate (in adolescents and adults, may be limited to subjective feelings of restlessness).
(d) Often has difficulty playing or engaging in leisure activities quietly.
(e) Is often 'on the go' or acts as if 'driven by a motor'
(f) Often talks excessively.

Impulsivity

(g) Often blurts out answers before questions have been completed.
(h) Often has difficulty awaiting turn.
(i) Often interrupts or intrudes upon others (e.g. butts into conversations or games).

B. Some hyperactive-impulsive or inattentive symptoms that cause impairment were present before age 7 years.

C. Some impairment from the symptoms is present in two or more settings (e.g. at school /work and at home.

D. There must be clear evidence of clinically significant impairment in social, academic or occupational functioning.

E. The symptoms do not occur exclusively during the course of a Pervasive Developmental Disorder, Schizophrenia or other Psychotic disorder and are not better accounted for by another mental disorder.

(From *The Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV) (1994) Washington DC: American Psychiatric Association).

Appendix 3.4

The Story of Fidgety Philip

"Let me see if Philip can
Be a little gentleman;
Let me see if he is able
To sit still for once at the table."
Thus Papa bade Phil behave;
And Mama looked very grave.
But Fidgety Phil,
He won't sit still;
He wriggles,
And giggles,
And then, I declare,
Swings backwards and forwards,
And tilts up his chair,
Just like any rocking horse –
"Philip! I am getting cross!"
See the naughty, restless child
Growing still more rude and wild,
Till his chair falls over quite.
Philip screams with all his might,
Catches at the cloth, but then
That makes matters worse again.
Down upon the ground they fall,
Glasses, plates, knives, forks and all.
How Mama did fret and frown,
When she saw them tumbling down!
And Papa made such a face!
Philip is in sad disgrace …

The above was published in 1904 in *The Lancet* (Hallowell and Ratey, 1996, p.270 – 271).

Appendix 3.5

Rating Scale	Overview	Comments
ADDES **(Attention Deficit Evaluation Scales)** McCarney, S.B. (1995) Columbia, MO: Hawthorne Educational Services, Inc.	• Population: school, ages 4 - 19/grades pre-K - 12; home, ages 3 - 18/ grades pre-K - 12 • Purpose: used to diagnose ADHD • Description: Home and school versions. Available in Spanish. A computer version using IBM-compatible or Mackintosh computers is available. • Forms: Teacher (60 items); parent (46 items) • 2 sub-scales: inattentive, hyperactive-impulsive • 5-point Likert scale based on frequency of behaviour	• Recommended by Demaray and Elting (2003): *"although it is presented in a 'cook book' approach, the ADDES is the only measure linked to intervention and thus, may be an advantage over other measures"* (p. 360). • Described in Maddox (1997).
ADHD Rating Scale-IV DuPaul, G.J., Power, T.J., Anastopolous, A.D. and Reid, R. (1998) New York: The Guilford Press	• Population: ages 5 - 18 • Purpose: to help identify the frequency of ADHD symptoms of a child as reported by a parent or educator • Description: paper and pencil questionnaire; available in Spanish • Forms: Home (18 items); school (18 items) • 2 sub-scales: Inattention (9 items), Hyperactivity-impulsivity (9 items), reflecting two subtypes of ADHD presented in DSM-IV (APA, 1994) • 4-point Likert scale of 0 *(never or rarely)* to 3 *(very often)* • Format: takes approximately 10 minutes for parents or teachers to complete. Raw scores are converted to percentiles based on the child's gender and age.	• Recommended by Demaray and Elting (2003): *"strong standardization samples and evidence for reliability and validity… For a measure of how the student rates on the criteria for ADHD from the DSM-IV, the ADHD-IV items closely reflect these criteria"* (p. 360). • Plake *et al.* (2003) offer reviews in addition to a description, including Jenkins, J.A. who reports favourably on the whole. However, she states that the Spanish version "*has not been carefully written"* (and) "*should be used with caution"*. Also it *"should only be generalized to children between the ages of 5 and 14 years"* (p. 22 - 23).
CRS-R **(Conners' Rating Scales - Revised)** Conners, C.K. (1997) North Tonawonda, NY: Multi-Health Systems	• Population: ages 3 - 17 years • Purpose: measure hyperactivity and other patterns of child behaviour • Description: paper/pencil or computer administered. Long version (59 - 80 items), short (27 - 28 items) • Short versions, 4 subscales: oppositional, cognitive problems/inattention, hyperactivity, ADHD index. • Long versions, parent: 14 subscales; teacher: 13 subscales • 4-point Likert scale based on frequency of behaviour • Forms: long and short versions of parent and teacher forms	• Demaray and Elting (2003) conclude that *"the CRS-R is by far the most comprehensive measure"* and go on to *"recommend it if the user is interested in assessing a broad range of behaviour"* (p360).

Rating scales recommended by Demaray and Elting (2003)

Appendix 3.6

Rating Scale	Overview	Comments
ACTeRS **(ADD/H: Comprehensive Teachers' Rating Scale)** Ullman,R.K., Sleator, E.K. and Sprague, R.L. (2000) Champaign, IL: Metritech, Inc.	• Population: Grade level: K - 8 • Purpose: diagnose ADHD; emphasize the attentional components of ADHD; monitor treatment effects • Forms: Teacher (24 items), parent (25 items) • 5 sub-scales: Attention, Hyperactivity, Social Skills, Oppositional Behavior, Early childhood • 5-point Likert scale based on frequency of behaviour	• It *"does not reflect the current subtypes of ADHD discussed in DSM-IV"* (p. 350).
ADHDT **(Attention-Deficit Hyperactivity Disorder Test)** Gilliam, J.E. (1995) Austin, TX: Pro-ed	• Population: ages 3 - 23 years • Purpose: identifies and evaluates attention deficit disorders • Description: 36 item norm-referenced rating scale • Forms: single response form for use by teachers, parents or others familiar with the individual • 3 sub-scales: hyperactivity, impulsivity, inattention • 3-point Likert scale based on severity of behaviour (0 = *not a problem*, 1 = *mild problem*, 2 - *severe problem*) • Format: questionnaire, 10 minutes	• *"The ADHDT was normed exclusively on an ADHD sample"* (p. 357). • Described in Maddox (1997).

Rating scales not recommended for use as each lacks important information in the manual and presents limited evidence of reliability and validity (Demaray and Elting, 2003).

Appendix 5.1

CONFIDENTIAL DECEMBER 2002

XXXXXXXXXSHIRE EDUCATION PSYCHOLOGY SERVICE

PUPILS DIAGNOSED WITH AD/HD IN SCHOOL
(please use separate sheet for each pupil – photocopy as necessary)

Please Tick Box

NAME OF CHILD…….. MALE ☐

DATE OF BIRTH……. FEMALE ☐

HOME POST CODE…….

SCHOOL…….

NATIONAL CURRICULUM YEAR…….

Cof P STAGE
a) SCHOOL ACTION ☐
b) SCHOOL ACTION PLUS ☐
c) IN THE PROCESS OF STATUTORY ASSESSMENT ☐
d) STATEMENTED ☐
If b) c) or d) which support service is involved ☐

DIAGNOSIS MADE BY:
ABC CLINIC ☐
PAEDIATRICIAN ☐
PSYCHIATRIST ☐
GP ☐
OTHER ☐

Is there ongoing involvement of above? Yes/No/Don't Know
Age at diagnosis (if known) ……..

MEDICATION ☐ NONE TICK IF APPROPRIATE

What medication is taken?…….

How often each day? ……..
.
Who administers the medication in school? …….

In your opinion has the medication made a difference?

a) Improved learning/behaviour
b) Made no difference to learning/behaviour
c) Had a negative effect on learning/behaviour

If Yes to a) or c) in what way?…….

Were staff asked to fill in any questionnaire prior to diagnosis? YES/NO

If Yes was this:-

ADHD Checklist ☐

Connors ☐

Achenbach (Teacher Behaviour Checklist) ☐

Other, please specify ☐

Were staff asked to fill in any questionnaire following medication? YES/NO

Is the pupil achieving educationally at their age level? YES/NO

Has the pupil got other SEN? YES/NO

Would you describe these as:-

- Learning difficulties (general) ☐
- Emotional and Behaviour Difficulties ☐
- Physical disabilities ☐
- Sensory difficulties ☐
- Speech and language Difficulties ☐
- Specific learning difficulties ☐
- Autistic Spectrum Disorder ☐

Are there any other pupils on your roll you think might have ADHD/ADD? YES/NO

Has the school received any training in this area? YES/NO

N.B. (Only answer this question on one return per school)

What kind of training would be most useful:-
(Tick as many boxes as appropriate)

- Information pack for teachers ☐
- Twilight session in school ☐
- Whole day centre based course ☐
- Local support groups for teachers with outside agencies in attendance ☐
- Other please specify ☐

Any other comments:-

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE.

PLEASE RETURN TO:-

Appendix 5.2

To: All xxxxxxxxxshire Head Teachers – Primary, Secondary and Special
All Pupil Referral Units
Early Years Settings

Date

Dear Colleague

ATTENTION DEFICIT/HYPERACTIVITY DISORDER PROJECT AND DAY CONFERENCE (Details attached).

We are endeavoring to find out how many pupils with a diagnosis of ADD, AD/HD are currently being educated within xxxxxxxxxshire LEA Provision. Our aims for the data collection exercise are:-

- To audit numbers, trends and to compare these with a similar LEA
- To gain information on types of medication being taken and its effectiveness
- To look at most effective ways of managing behaviour within the classroom for pupils with AD/HD.
- To address the training needs of schools

It would be most helpful if you could record on the attached short questionnaire the details of any child identified within your school as having ADD or AD/HD; whether or not they have a Statement of Special Needs. We would like to be able to analyse the data, in order to give preliminary findings at the day conference on March 1st, so responses by **30 January 2003** would be greatly appreciated. Xxxxx a Senior Specialist Educational Psychologist with xxxxxxxxxshire LEA and Professor xxxxx at the Centre for Special and Inclusive Education at xxxxx College are co-ordinating the project.

Please would you let the parents know of any child whom you have identified by giving them a copy of the attached information slip.

We are aware that, in most instances, this form will be completed by busy SENCos. The topic is of concern and importance to the authority, schools and above all children and their families.

Findings will be circulated to schools that return questionnaires.

Please photocopy the attached form as many times as necessary if you have more than one child in your school diagnosed as having AD/HD.

Yours sincerely

Principal Educational Psychologist/Access and Inclusion manager

Appendix 5.3

INFORMATION FOR PARENTS

XXXXXXXXXSHIRE AD/HD SURVEY

The xxxxxxxxxshire Local Educational Authority in collaboration with xxxxx College is carrying out some research to improve response to, and support for, pupils identified with Attention Deficit Disorder and Attention Deficit with Hyperactivity Disorder. In order to do this we are gathering information on the numbers of pupils diagnosed as having ADD or AD/HD within our schools. We have asked Head Teachers to let us know the names of pupils within their schools who have this diagnosis. Unless you let us know otherwise your son or daughter has been included in our information.

Please be assured that the whole exercise involves total confidentiality of information. We are mainly concerned to identify the number of ADD/ADHD pupils within our schools, to look at the kinds of medication which are proving effective, and to plan training for schools to enable them to work most effectively with these pupils.

We very much see this as a way of helping and supporting all children with these kinds of difficulties.

HEADED NOTEPAPER

Urgent: please do not throw this away

25 March 2003

Dear Colleague,

ADHD Survey

I wrote to you in January asking you to complete the enclosed questionnaire for any children in your school with a diagnosis of ADHD. So far we have had a return of about 33%. We need 100% return to enable us to support you as much as possible in trying to meet the needs of these, often challenging, children. This may be for a variety of reasons, e.g. because you have a 'nil return'.

Please note: -
We want to hear of you don't have any ADHD children – please mark your questionnaire with the school name and write 'nil return' before returning.

If it is difficult to provide all of the information requested send a partial return - this is better than none.

I have enclosed a further copy of the questionnaire. Again many thanks for your time. All schools who respond will receive a copy of the results.

Please return questionnaires by **April 11th.**

Yours sincerely

Specialist Senior Educational Psychologist

Appendix 5.5

DRAFT: CONFIDENTIAL
11 May 2003.

HEADED NOTEPAPER.

Headteacher and School address.
Pre-paid addressed reply envelope to be included.

Dear ,

URGENT: the XXX LEA Attention Deficit/Hyperactivity Disorder (AD/HD) Survey.

The above survey has been initiated by xxxxx, Principal Educational Psychologist/Access and Inclusion Manager and xxxxx, Specialist Senior Educational Psychologist of the XXX LEA Educational Psychology Service (EPS) in collaboration with Visiting Professor xxxxx and the Head of the Centre for Special and Inclusive Education (CSIE) xxxxx at xxxxx College

A similar project carried out in another LEA achieved a response rate of almost 100% from their schools to a Questionnaire on AD/HD pupils in schools. **We are aiming at a response rate of 100%. With your help, this CAN be achieved.** The survey will enable the XXX LEA EPS to audit numbers and trends, to compare these with a similar LEA and also to address the training needs of schools. Progress on the survey was reported at a One Day Conference on AD/HD held at xxxxx College and attended by approaching 200 colleagues and parents earlier this term.

The AD/HD Questionnaire was sent to all schools in January and to non-responding schools in April. The overall response rate has been encouraging.

As yet, we have no record of a response to the Questionnaire from your school. Hence, on behalf of the PEP/AIM, a member of the project team contacted you recently via telephone. As requested, we enclose a further copy of the letters summarising the purpose of the survey plus a further copy of the AD/HD Questionnaire.

In the context of this survey, ***a returned Questionnaire indicating that the school has NO pupils with AD/HD is extremely important.***

WHETHER OR NOT YOU HAVE ANY PUPILS AT YOUR SCHOOL WITH AD/HD, PLEASE COMPLETE AND RETURN THE QUESTIONNAIRE TO XXXXX AS SOON AS POSSIBLE IN THE ENCLOSED PRE-PAID ADDRESSED ENVELOPE.

When the Questionnaires have been returned and analysed, the findings will be circulated to all schools in the County.

We thank you in anticipation of an early response.

Yours sincerely,

XXX PEP/AIM,

Appendix 5.6

Fixed Interval Sampling

Recordings of observations of predominant behaviour displayed by target pupil over 15-second time periods.

Pupil		**Class**		**No. in Class**		**Observer**		**Date**	

Activity		**Setting**	

00	**15**	**30**	**45**	**00**	**15**	**30**	**45**	**00**	**15**	**30**	**45**	**00**	**15**	**30**	**45**	**00**	**15**	**30**	**45**	**No ADHD**	**Inatt. (1 – 9)**	**Hy/Imp (10 –18)**	**Behaviour according to DSM-IV criteria**

Inattention

1. Fails to give close attention to details
2. Difficulty sustaining attention
3. Does not appear to listen
4. Difficulty in following through instructions
5. Avoids tasks requiring sustained mental effort
6. Difficulty in organising tasks and activities
7. Loses things necessary for tasks and activities
8. Easily distracted by extraneous stimuli
9. Forgetful

Hyperactivity

10. Fidgets with hands or feet
11. Unauthorised movement in the classroom
12. Runs about or climbs excessively in situations where it is inappropriate
13. Has difficulty in playing quietly
14. Is often 'on the go'
15. Talks excessively

Impulsiveness

16. Blurts out answers
17. Difficulty awaiting turn
18. Interrupts or intrudes upon others (butts in)

[Adapted from Ayers, H., Clarke, D. and Ross, A. (1996) *Assessing Individual Needs: A Practical Approach* (2nd ed.) London: David Fulton]

(Linda Wheeler, 2002)

Appendix 5.7

Instructions - Fixed Interval Sampling (FIS)

Purpose

- FIS is used to quantify the duration and frequency of predominant behaviours (ADHD or non-ADHD) shown by the target pupil over the total number of observation periods.
- It involves observation of a target pupil only.
- It can be used for any length of lesson, if necessary using more than one recording sheet (35 minutes per sheet, i.e. 35 x 4 = 140 observations).

Description of instrument

- The recording section on the schedule consists of seven rows each containing five-minute periods which are subdivided into 20 cells. Each cell represents a 15-second period of observation.
- The analysis section consists of three columns for summaries of total recordings for behaviour categories ('No ADHD', 'inattention' and 'hyperactive-impulsive' behaviours).
- DSM-IV criteria for ADHD are listed.

Procedure

- Familiarise yourself with DSM-IV criteria for ADHD.
- Remain as unobtrusive as possible and ideally take no part in the lesson.
- Record at the top of the sheet: the name of the target pupil; the date and time; the number in the group (i.e. class group, KS2, whole school, etc); if there is just a teacher or whether any support is given (e.g. TA offering general support or SSA supporting one particular child); and brief details regarding context and setting.
- Using a watch with a second hand, preferably attached to a clipboard, observe and record in the relevant cell the *predominant* behaviour displayed during fixed interval periods of 15 seconds. Refer to the list of DSM-IV ADHD behaviours numbered 1 – 18. If none of these are displayed, record as 0.
- In practice if necessary, observe for about 10 seconds and use 5 seconds to make the recording.
- In some cases a decision has to be made as to the *predominant* behaviour. If it is not possible to ascertain the exact behaviour, aim to identify whether the behaviour comes in one of the main categories, i.e. 'No ADHD', 'inattention' or 'hyperactivity/impulsivity' (these last two are grouped together for analysis purposes).
- Recordings are summarised at a later date in the analysis section. Percentages of the total numbers of recordings are calculated for each of the three behaviour categories.

Appendix 5.8

Fixed Interval Sampling (FIS) observation periods - duration and number of 15-second recordings

		Shortest observation period		Longest observation period		Average observation period	
		Number of minutes	Number of recordings	Number of minutes	Number of recordings	Number of minutes	Number of recordings
Case 1	**Main phase**	14	56	90	360	38	152
	Follow up phase	20	80	90	360	52	208
Case 2	**Main phase**	15	60	65	260	43	172
	Follow up phase	15	60	92	368	46	184
Case 3	**Main phase**	16	64	65	260	42	168
	Follow up phase	17	68	52	208	44	176
Case 4	**Main phase**	12	48	58	232	30	120
	Follow up phase	13	52	80	320	39	156
Case 5	**Main phase**	15	60	80	320	43	172
	Follow up phase	18	72	62	248	45	180
Case 6	**Main phase**	14	56	65	260	46	184
	Follow up phase	28	112	65	260	52	208
All case studies	**Both phases**	16	64	72	288	43	172

Appendix 5.9

Observation Schedule – Instantaneous Time Sampling

Behaviour according to DSM-IV criteria
Inattention 1. Fails to give close attention to details 2. Difficulty sustaining attention 3. Does not appear to listen 4. Difficulty in following through instructions 5. Avoids tasks requiring sustained mental effort 6. Difficulty in organising tasks and activities 7. Loses things necessary for tasks and activities 8. Easily distracted by extraneous stimuli 9. Forgetful **Hyperactivity** 10. Fidgets with hands or feet or squirms in seat 11. Unauthorised movement in the classroom 12. Runs about or climbs excessively in situations where it is inappropriate 13. Has difficulty in playing quietly 14. Is often 'on the go' 15. Talks excessively **Impulsiveness** 16. Blurts out answers 17. Difficulty awaiting turn 18. Interrupts or intrudes upon others (butts in) 0. None of the above behaviours

[Based on Munden, A. and Arcelus, J. (1999) *The AD/HD Handbook* London: Jessica Kingsley]

Date: **Time:** **Context:**

(Recordings of observations of Target pupil and Comparison pupil behaviours taken at 30-second intervals for a 10-minute period)

T																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
C																				

T																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
C																				

T																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
C																				

Analysis

Time	Context	**Target**			**Comparison**		
		No ADHD	Inattention	Hyp/Imp	No ADHD	Inattention	Hyp/Imp

(Linda Wheeler, 2002)

Appendix 5.10

Instructions - Instantaneous Time Sampling (ITS)

Purpose

- ITS is used to gather quantitative data regarding how many times ADHD behaviours are recorded during a 10-minute time period (frequency).
- It may be used for comparison between behaviours displayed by the target (T) and comparison pupil (C) (a non-ADHD peer previously nominated by the class teacher).
- This type of recording can be used for 1,2 or 3 x 10 minute periods (or even more), or for part of a 10-minute period, for example, during an assembly which lasts 25 minutes, recordings could be taken throughout.

Description of instrument

- The ITS schedule includes a table listing all 18 ADHD DSM-IV criteria, subdivided into the three core behaviour categories.
- There are three recording boxes on the sheet each consisting of a ten-minute time line with 20 cells for behaviour recordings for both the target pupil and the comparison pupil at 30-second intervals.
- The analysis section is divided into three behaviour columns for both the target and comparison pupils.

Procedure

- Familiarise yourself with DSM-IV criteria for ADHD.
- Remain as unobtrusive as possible and ideally take no part in the lesson.
- Record on the sheet: the name of the target pupil; the date and time; brief details regarding context and setting; the number in the group (i.e. class group, KS2, whole school, etc) and if there is just a teacher or whether any support is given (e.g. TA offering general support or SSA supporting one particular child).
- If planning to use 3 x10-minute periods in a lesson (start, middle and end) it is helpful to know the approximate time the lesson will end. If a lesson is timed for an hour it is relatively easy to spread out the three 10 minute recording periods evenly over the course of the hour.
- Using a watch with a second hand, preferably attached to a clipboard, take a 'snapshot' recording every 30 seconds. In practice look at both pupils at the same 30-second intervals and record the appropriate behaviour category by referring to the 18 DSM-IV ADHD behaviour categories listed at the top of the sheet. If none is evident, record as 0.
- Record what is happening *at that particular time,* not what has gone on in the meantime.
- Recordings are summarised at a later date in the analysis section. The total numbers of recordings are calculated for each of the three behaviour categories for both pupils.

Appendix 5.11

Observer:

Date:

Inter-rater observations (Video 1)

Observation Number	Video	Time	Setting	Recording	Comments
1	1	6.23-6.39	Boy - green jumper		
2		12.21-12.37	Boy - white top		
3		26.50-27.28	Boy - blue top		
4		28.57-29.27	Boy with tie		
5		42.01-42.18	Girl - curly hair		
6		50.09-50.21	Girl - blue top		

BBC (1992) *The Management of Pupil Behaviour* [Videotape]. Wetherby: BBC Educational Developments.

Appendix 5.12

Observer:

Date:

Inter-rater observations (Video 2)

Observation Number	Video	Time	Setting	Recording	Comments
7	2	2.51-3.12	Oriental boy on table		
8		2.51-3.12	Boy on table, wearing tie		
9		10.10-10.48	Boy wearing white shirt		
10		10.58-11.13	Girl - orange and black top		
11		10.58-11.13	Boy - white shirt		
12		12.01-12.18	Boy - blue top		
13		13.27-13.40	Boy - white top		
14		20.05-20.12	Boy with glasses		
15		20.05-20.12	Boy behind boy with glasses		
16		20.49-20.57	Oriental boy		

Uniview (2003) *Attention Difficulties: Practical Strategies for the Primary Classroom* [Videotape].Wirral: Uniview.

Appendix 5.13

Observer:

Date:

Inter-rater observations (Video 3)

Observation Number	Video	Time	Setting	Recording	Comments
17	3	45.53-46.09	"David"		
18		48.41-48.50	"		
19		51.23-51.34	"		
20		52.21-52.36	"		
21		54.46-55.00	"		
22		55.21-55.35	"		

Department for Education and Employment (2000) *The National Literacy Strategy: Supporting Pupils with Special Educational Needs in the Literacy Hour* [Videotape]. London: DfEE.

Appendix 5.14

Analysis of inter-observer ratings (Researcher and observers 1 and 2)

		Researcher and observer 1 2002	Researcher and observer 1 2003	Researcher and observer 2 2004	Number of observations in agreement
Video	**Observation number**				
1	1	Agree		Agree	2
	2	Agree		Agree	2
	3	Agree		Agree	2
	4	Agree		Agree	2
	5	Agree		Agree	2
	6	Agree		Agree	2
2	7		Agree	Agree	2
	8		Agree	Agree	2
	9		Agree	Agree	2
	10		Agree	Agree	2
	11		Agree	Agree	2
	12		Agree	Agree	2
	13		Agree	Disagree	1
	14		Agree	Agree	2
	15		Agree	Agree	2
	16		Agree	Agree	2
3	17			Agree	1
	18			Agree	1
	19			Agree	1
	20			Agree	1
	21			Agree	1
	22			Agree	1
		6/6	10/10	21/22	37/38
		100% agreement	100% agreement	95% agreement (**NB** 100% agreement on core symptom group)	97% agreement

Appendix 5.15

Analysis of intra-observer codings made by researcher

		2002 Researcher coding 0 - 18	2003 Researcher coding 0 - 18	2004 Researcher coding 0 - 18	Same coding used	
					DSM-IV criteria (plus 0 for no ADHD) 0 - 18	Group: No ADHD Inattention (1 – 9) Hyp-imp (10 – 18)
Video	**Observation number**					
1	1	0		0	✓	✓
	2	2		2	✓	✓
	3	2		2	✓	✓
	4	2		10	X	X
	5	2		2	✓	✓
	6	2		2	✓	✓
2	7		2	8	X	✓
	8		10	10	✓	✓
	9		10	10	✓	✓
	10		10	2	X	X
	11		2	2	✓	✓
	12		0	0	✓	✓
	13		0	2	X	X
	14		2	8	X	✓
	15		0	0	✓	✓
	16		2	10	X	X
3	17			2		
	18			0		
	19			10		
	20			0		
	21			0		
	22			0		
					10/16 63%	12/16 75%

- 63% of recordings agreed exactly
- 75% of recordings agreed on relevant group: 'No ADHD', inattention or hyperactive-impulsive (hyp-imp).
- Observations 17 – 22 (video 3) were not applicable for intra-observer analysis as they were only coded on one occasion.

Appendix 5.16

Pupil Questionnaire

[adapted from Lawrence, D. (1996) *Enhancing Self-esteem in the Classroom* (2nd ed.). London: Paul Chapman]

		Yes	No	Don't know
1.	Do you think that your parents usually like to hear about your ideas?			
2.	Do you often feel lonely at school?			
3.	Do other children often break friends or fall out with you?			
4.	Do you like playing team games?			
5.	Do you think that other children often say nasty things about you?			
6.	When you have to say things in front of teachers, do you usually feel shy?			
7.	Do you like writing stories?			
8.	Do you often feel sad because you have nobody to play with at school?			
9.	Are you good at number work?			
10.	Are there lots of things about yourself you would like to change?			
11.	When you have to say things in front of other children do you usually feel silly?			
12.	Do you like making things?			
13.	When you want to tell a teacher something, do you usually feel silly?			
14.	Do you often have to find new friends because your old friends are playing with somebody else?			
15.	Do you usually feel silly when you talk to your parents?			
16.	Do other people often think that you tell lies?			

Which two children would you choose to play with in the school playground?

Scoring Key:

- *Questions 4,7,9 and 12 are distractors*
- *Score +2 for YES answer to Q1*
- *Score +2 for NO answers to remaining scored questions*
- *Score +1 for DON'T KNOW answers to scored questions*
- *Score 0 for all other possibilities*

Maximum possible score in the direction of high self-esteem +24

Appendix 6.1

Schools database - main and follow-up phases

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Case study M - main F - follow-up**	***School and number**	**Number on roll**	**Number of ADHD diagnoses in 2003**	**Free school meals**	**SA KS1**	**SA KS2**	**SA+ KS1**	**SA+ KS2**	**Total KS1+2 without statements**	**State-ments KS1**	**State-ments KS2**	**Total KS1+2 with state-ments**	***SA KS3***	***SA+ KS3***	***State-ments KS3***	**Total SEN**
M1 2002-3	First school, **school 1**	423	0B 0G	117 (27.7%)	19B 6G	11B 8G	11B 3G	8B 2G	68 (16.1%)	6B 0G	4B 1G	11 (2.6%)	-	-	-	79 (18.7%)
F1 2003-4	"	424	"	119 (28%)	32B 8G	10B 5G	9B 2G	5B 2G	73 (17.2%)	3B 0G	11B 0G	14 (3.3%)	-	-	-	87 (20.1%)
M2 2002-3	Primary school, **school 2**	439	7B 1G	68 (15.5%)	16	22	11	8	57 (12.9%)	0	6	6 (1.4%)	-	-	-	63 (14.9%)
F2 2003-4	"	443	"	70 (15.8%)	17B 9G	15B 13G	6B 0G	9B 4G	73 (16.4%)	0 0	3B 3G	6 (1.4%)	-	-	-	79 (17.8%)
M3 2002-3	First school, **school 3**	207	3B 0G	97 (46.9%)	28	26	26	13	93 (44.9%)	1	0	1 (0.5%)	-	-	-	94 (45.4%)
F3 2003-4	Middle school, **school 7**	540 (360 KS2)	3B 0G	(17%)	-	18B 11G	-	17B 6G	52 (14.4% of 360)	-	3B 1G	4 (1.1% of 360)	*14B 2G*	*0B 1G*	*0 0*	73 (13.5%) inc KS3
M4 2002-3	First school, **school 4**	130	2B 0G	16 (12.3%)	1	3	2	5	11 (8.5%)	2	2	4 (3.1%)	-	-	-	15 (11.5%)
F4 2003-4	"	130	"	18 (13.8%)	0B 0G	3B 1G	1B 1G	4B 1G	11 (8.5%)	0B 5G	2B 0G	7 (5.4%)	-	-	-	18 (13.8%)
M5 2002-3	First school, **school 5**	140	0B 0G	42 (30%)	23	7	8	14	52 (37.1%)	3	2	5 (3.6%)	-	-	-	57 (40.7%)
F5 2003-4	Middle school, **school 8**	498 (248 KS2)	0B 1G	(16%)	-	20B 11G	-	11B 5G	47 (19% of 248)	-	4B 0G	4 (1.6% of 248)	*8B 0G*	*14B 3G*	*4B 1G*	81 (16.3%) inc KS3
M6 2002-3	Primary school, **school 6**	398	0B 0G	14 (3.5%)	19	23	6	11	59 (14.8%)	0	1	1 (0.3%)	-	-	-	60 (15.1%)
F6 2003-4	"	403	"	16 (4%)	7B 6G	8B 9G	8B 0G	14B 3G	55 (13.6%)	0	1B 1G	2 (0.5%)	-	-	-	57 (14.1%)

* 8 schools are mentioned here because after the main phase, pupil 3 moved from first school 3 to middle school 7 and pupil 5 moved from first school 5 to middle school 8

** All 6 case study target pupils are included in figures in columns 6 - 13 (Detailed information on SEN Code of Practice levels for individual pupils is provided in separate tables)

Appendix 7.1

CENTRE FOR SPECIAL AND INCLUSIVE EDUCATION UNIVERSITY COLLEGE XXXXXXXXX AND XXXXXXXXXXXXXXX EDUCATIONAL PSYCHOLOGY SERVICE JOINT WHOLE-DAY CONFERENCE ON THE 22ND MAY 2004

INCLUDING AND TEACHING CHILDREN WITH ADHD

DELEGATES' QUESTIONS/CONCERNS AND FEEDBACK

(A) PLEASE COMPLETE SECTION (A) BEFORE THE PROGRAMME STARTS AT 9:00 a.m.

List up to three questions concerning ADHD that you would like to be addressed during today's Programme.

Q1……

Q2……

Q3……

(B) AT THE END OF THE DAY CONFERENCE

By circling the appropriate number, please indicate how well EACH of the three questions that you personally listed at the START of the day, has been addressed.

	Excellently 5	Satisfactorily 4	Adequately 3	Minimally 2	Not at all 1
Q1.	5	4	3	2	1
Q2.	5	4	3	2	1
Q3.	5	4	3	2	1

C. LOOKING TO THE FUTURE

What are the MOST pressing concerns that you have about provision for the education of pupils with ADHD?

…….

…….

…….

Appendix 8.1

Fixed Interval Sampling (Ben – main phase) (Page 1 of 2)

(Recordings of Target pupil's predominant behaviour for 15-second intervals over a fixed time period)

Date, time, duration	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inattention	Hyperactivity/ Impulsivity
Thur 19 Sep 0918 – 42 min	168	**Literacy –** group 3 activities: group reading, IT, writing	83%	5%	12%
1043 –35 min	140	**Numeracy** – group Number bonds, use dice for sums, games	65%	9%	26%
Fri 4 Oct 0912 – 39 min	156	**Literacy** – group Group reading, copy sentence, game, IT	73%	14%	13%
1154 – 19 min	76	**Numeracy** – group Homework given out, short Q&A session	49%	20%	31%
Wed 9 Oct 0918 – 52 min	208	**Literacy** – group Listening activity, game, Big book, IT	78%	8%	14%
1115 – 20 min	80	**Numeracy** – group Subtraction, games of Bingo, Fizz Buzz	75%	9%	16%
Mon 14 Oct 0906 – 65 min	260	**Literacy** – group Spelling test, writing news, Big book	68%	20%	12%
1038 – 62 min	248	**Numeracy** – group Mental maths, measuring, Fizz game	65%	8%	27%
1432 – 25 min	100	**KS2 Assembly** Talk in hall about stamps from visitors	70%	9%	21%
Tues 22 Oct 1042 – 20 min	80	**Numeracy** – group Worksheet, addition	73%	10%	17%
1108 – 40 min	160	**KS2 Hymn practice** In hall, practice for harvest festival	71%	14%	15%
Fri 8 Nov 0913 – 46 min	184	**Literacy** – group, N = first 4, then 9 S&L session, pairs game, cut out words	91%	7%	2%
1037 – 65 min	260	**Numeracy** – group. Numbers worksheet, groups of 2,10, Bingo	67%	7%	26%
Thu 14 Nov 0918 – 48 min	192	**Literacy –** group. Shared reading, Big Book, cut & stick sheet	75%	6%	19%
1041 – 54 min	216	**Numeracy** – group. Worksheet, multiplication groups, IT	77%	6%	17%
1317 – 91 min	364	**History** – Yr group, then class group Video, discuss on carpet, history poster IT	78%	9%	13%
Tu 19 Nov 0908 – 62 min	248	**Literacy** – group Listening, Big book, writing, cut & stick	79%	7%	14%
1045 – 56 min	224	**Numeracy** – group. Worksheet, practical division, number facts	52%	17%	31%
1152 – 14 min	56	**Literacy** – S & L group, N = 4. Speech & Language, social skills activities	73%	11%	16%

Fixed Interval Sampling (Ben – main phase) (Page 2 of 2)

Date, time, duration	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inattention	Hyperactivity/ Impulsivity
Wed 27 Nov 0913 – 57 min	228	**Literacy** – group Cut & stick, handwriting, Big Book	90%	3%	7%
1037 – 27 min	108	**Hymn Practice** KS2 Practising Christmas carols in hall	59%	22%	19%
1119 – 40 min	160	**Numeracy** – group. Practical number activity, game, worksheet	53%	14%	33%
1321 – 17 min	68	**History** –Year group On carpet watching video in classroom	100%	0	0
Th 12th Dec 1037 – 60 min	240	**KS2 Christmas concert rehearsal** In school hall, prior to church concert	43%	11%	46%

Appendix 8.2

Fixed Interval Sampling (Ben - follow up phase) (Page 1 of 2)

(Recordings of Target pupil's predominant behaviour for 15-second intervals over a fixed time period)

Date, time, duration	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inattention	Hyperactivity /Impulsivity
Wed 17 Sept 0908 – 65 min	260	**Numeracy** group, N = 14 Odds & evens, practical, using cubes; worksheet	59%	20%	21%
1110 – 65 min	260	**Literacy** group, N = 14 Oral, 'facts', write sentences, handwriting	66%	25%	9%
1314 – 90 min	360	**Science** group, N = 14 'Solids, liquids & gases' practical, written	56%	38%	6%
Tues 23 Sept 0911 – 60 min	240	**Numeracy** group, N = 12 Missing numbers; add, subtract 11	63%	25%	12%
Fri 3 Oct 0907 – 63 min	252	**Numeracy** group, N = 15 Odds & evens, worksheets – mental arithmetic problems	67%	16%	17%
1032 – 24 min	96	**Literacy – Speech & language** gp, N = 5 Recap last week – food types, worksheet	83%	6%	11%
1100 – 43 min	172	**Literacy** group, N = 14 Test on '-it' words, handwriting practice	71%	16%	13%
1430 – 29 min	116	**Assembly** – whole school in hall Hymn, story, trophies shown, prayer	45%	28%	27%
Thur 9 Oct 1415 – 20 min	80	**KS2 Harvest Festival –** in hall, some parents in attendance	53%	22%	25%
Thur 6 Nov 0903 – 67 min	268	**Numeracy** group – recap 'counting on'; grid, worksheets - multiples of 5 and 2	85%	10%	5%
1035 – 65 min	260	**Literacy/ICT** – group, writing about an imaginary monster, work in pairs on PC	80%	14%	6%
Tues 11 Nov 1033 – 68 min	272	**Music – singing workshop –** Y4 group Worked with Music T, performance prep.	36%	45%	19%
1321 – 41 min	164	**Rehearsal KS2 Christmas Performance** In hall, parts allocated, practice songs, etc	31%	30%	39%
Wed 19 Nov 0950 – 52 min	208	**Numeracy** group – odds & evens oral, written; number bonds to 12	73%	18%	9%
1115 – 48 min	192	**Literacy/ICT** group – type out poem, written previously, work in pairs	63%	20%	17%
1318 – 66 min	264	**Science** group – 'Temperature' – recap previous work; experiments; record	73%	20%	7%
Mon 24 Nov 0909 – 61 min	244	**Numeracy** group – recap HTU, practical & written 'multiplication' strategies	87%	9%	4%
1034 – 68 min	272	**Literacy** group – 'ch' words, magic 'e' words, handwriting – 'Toad' poem	58%	22%	20%
1319 – 35 min	140	**Geography** – work in pairs on 'Bingo' game – match symbols to names	39%	42%	19%
1435 – 22 min	88	**Assembly** – whole school in hall, including handing out of certificates	50%	25%	25%

Fixed Interval Sampling (Ben – follow up phase) (Page 2 of 2)

Date, time, duration	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inattention	Hyperactivity /Impulsivity
Fri 28 Nov 0906 – 63 min	252	**Numeracy** group – tens & units practical; multiplication worksheet	69%	15%	16%
1033 – 23 min	92	**Literacy – Speech & Language** group, (N = 6, TA) Discuss food; role play	76%	9%	15%
1058 – 43 min	172	**Literacy** group – speaking & listening, pets; spelling – oral, then written work	67%	22%	11%
Wed 3 Dec 0908 – 57 min	228	**Numeracy** group – 'Bingo'; oral, practical & written multiplication work	80%	14%	6%
Thur 11 Dec 1036 – 70 min	280	**ICT** – customise individual photograph for use in making calendar	81%	8%	11%

Appendix 8.3

Instantaneous Time Sampling Summary (Ben – main phase) (Page 1 of 2)

(Observations of Target and Comparison behaviours recorded at 30-second intervals for a 10-minute period, or as stated)

Date, time recording period began	Lesson	Recordings out of 20			Recordings out of 20		
		Target			Comparison		
		0	Inattn	Hy/Im	0	Inattn	Hy/Im
Th 19 Sep	**Science**						
1318	**Start** – on carpet, discuss growth	8	4	8	16	2	2
1344	**Middle** – working at tables	11	6	3	14	5	1
1412	**End** – on carpet	5	10	5	13	6	1
Mo 23 Sep	**Literacy (1)**(main class group)						
0855 – 20 min	Register, news, intro activity (making a story book)	17/40	10/40	13/40	27/40	12/40	1/40
	Literacy (2) (main class group)						
1120	Making story book, at tables	6	7	7	17	3	0
1145	As above (story tape playing)	11	3	6	11	8	1
1204	On carpet, looking at gas mask	9	1	10	20	0	0
	History – N = approx 50 in hall						
1331	**Start** – 'Doris' WW2 talk	14	0	6	20	0	0
1425	**Middle –** explaining activities	14	0	6	19	1	0
1436	**End** – Activities round hall	16	0	4	20	0	0
Fri 4 Oct	**Music Concert in hall** (KS2)						
1040	**Start**	16	2	2	20	0	0
1105	**Middle**	10	2	8	19	0	1
1120	**End**	9	6	5	18	2	0
	Science						
1317	**Start** – on carpet, discuss Pets	12	2	6	18	1	1
1400	**End** – completing worksheet	11	3	6	17	2	1
	Circle Time						
1422	**Start –** on chairs, in circle	10	6	4	20	0	0
1440	**End –** as above, playing game	14	0	6	19	0	1
Wed 9 Oct	**Hymn practice** KS2						
1042 (20 mins)	In hall, practice for harvest festival	30/40	6/40	4/40	34/40	2/40	4/40
	History – N = 90, then 34						
1315	**Start** – Y3, on carpet, video	15	3	2	19	0	1
1342	**Middle** – class group, on carpet	3	2	15	16	2	2
1405	**End** – class writing at tables	13	6	1	14	5	1

Instantaneous Time Sampling Summary (Ben – main phase) (Page 2 of 2)

Date, time recording period began	Lesson	Recordings out of 20			Recordings out of 20		
		Target			Comparison		
		0	Inattn	Hy/Im	0	Inattn	Hy/Im
Mo 14 Oct	**RE**						
1150	Discuss 'Special Object' on carpet	5	6	9	17	0	3
	Art						
1318	Bonfire night picture, at tables	19	1	0	19	1	0
1413	As above, after swimming	11	8	1	17	3	0
Tu 22 Oct	**Literacy** – group						
0917	**Start** – Listening activity	17	1	2	19	1	0
0945	**Middle** – Big book – 'Mystery Mints' story	15	3	2	18	1	1
1000	**End** – Discuss Big book story	6	5	9	15	0	5
Fri 8 Nov	**DT**						
1318	**Start** – Intro, sitting on carpet	8	3	9	16	0	4
1353	**Middle** – designing, making model	2	11	7	18	1	1
1413	**End** – finish, tidy up, sit on carpet	5	2	13	18	0	2
	Whole-school assembly						
1435 – 20 min	Sitting on floor in school hall	20/40	3/40	17/40	33/40	3/40	4/40
Thu 14 Nov	**Literacy** – class group						
1203	T reads story, children on carpet	7	7	6	17	3	0
Mo 2 Dec	**Literacy** – group						
0912	**Start –** Spelling test, at tables	11	3	6	18	1	1
0939	**Middle** – Big book, all on carpet	12	4	4	18	2	0
0953	**End** – sit at tables, write sentences	18	2	0	18	2	0
	Numeracy – group						
1039	**Start –** worksheet (+, -)	17	1	2	19	1	0
1101	**Middle** – practical fractions	12	3	5	15	1	4
1116	**End** – practical number bonds	14	4	2	18	0	2
Th 12 Dec	**Art**						
1316	**Start** – on carpet, intro to lesson	3	7	10	15	3	2
1346	**Middle –** calendar picture	10	6	4	16	4	0
1418	**End** – cut & stick worksheet	13	6	1	17	3	0

Appendix 8.4

Instantaneous Time Sampling Summary (Ben – follow up phase) (Page 1 of 2)

(Observations of Target and Comparison behaviours recorded at 30-second intervals for a 10-minute period, or as stated)

Date, time recording period began	Lesson	Recordings out of 20			Recordings out of 20		
		Target			Comparison		
		0	Inattn	Hy/Im	0	Inattn	Hy/Im
Wed 17 Sep	**Hymn Practice –** KS2 in hall						
1040	**Start**	14	4	2	20	0	0
1050	**End**	9	5	6	19	1	0
Tues 23 Sep	**Singing Workshop** – Y4 in hall						
1037	**Start –** copy movements, rhythms	15	0	5	19	1	0
1047	**Middle –** chant word, phrases	12	3	5	16	1	3
1057	**End –** learn African song	12	6	2	15	3	2
	Art – class group						
1316	**Start –** intro, draw portrait	15	3	2	16	4	0
1436	**End –** work on second portrait	8	9	3	13	7	0
Fri 3 Oct	**Harvest Festival Practice**						
1318	**Start }**	3	6	11	10	10	0
1328	**Middle }** KS2 in hall	11	5	4	16	3	1
1338	**End }**	9	3	8	14	6	0
Thur 9 Oct	**Art –** short session before H Fest'l						
1320	**Start }** finish off several	15	3	2	15	5	0
1330	**End } '**portrait' tasks	15	2	3	19	1	0
Thur 6 Nov	**History –** Roman Soldiers						
1321	**Start** – oral - Celts & Romans	7	2	11	17	2	1
1344	**Middle –** T adds labels to picture	13	4	3	18	2	0
1425	**End –** colour, label worksheet	12	7	1	20	0	0
Wed 19 Nov	**KS2 Hymn Practice –** in hall						
0907	**Start**	10	9	1	15	5	0
0917	**Middle**	14	3	3	18	2	0
0927	**End**	12	2	6	18	2	0
Mon 24 Nov	**ICT –** in ICT suite (ICT teacher)						
1146	**Start** – T demonstrates task	7	13	0	19	1	0
1156	**End –** work on task, use 'Dazzle'	13	4	3	16	4	0
	RE – Special journeys (Xmas)						
1359	**Start** – recap story, study map	7	5	8	14	4	2
1409	**Middle –** T reads more story	8	5	7	14	6	0
1419	**End –** writing, drawing task	14	4	2	16	3	1

Instantaneous Time Sampling Summary (Ben – follow up phase) (Page 2 of 2)

Date, time recording period began	Lesson	Recordings out of 20			Recordings out of 20		
		Target			Comparison		
		0	Inattn	Hy/Im	0	Inattn	Hy/Im
Wed 3 Dec	**Rehearsal Xmas performance**						
1121	**Middle**	8	7	5	16	2	2
1131	**End**	8	9	3	15	5	0
Thu 11 Dec	**DT** – Roman siege machine						
0925	**Start** – T intro to design activity	6	10	4	13	6	1
0948	**Middle –** start diagram, ideas	11	9	0	14	6	0
1152	**End (later in morning, after ICT) –** more work on above	17	2	1	14	6	0
	History – 'Invaders' (Y4 group, minus choir, in classroom)						
1319	**Start –** watch videos - Celts	17	3	0	19	1	0
1340	**Middle** – Romans	16	2	2	20	0	0
1357	**End –** Anglo-Saxons	14	4	2	19	1	0

Fixed Interval Sampling (Carl – main phase) (Page 1 of 2)

(Recording of Target pupil's predominant behaviour for 15-second intervals over a fixed time period)

Date, time, duration	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inattention	Hyperactivity /Impulsivity
Fri 20 Sep 0947 – 35 min	140	**Literacy –** group, N = 4 Comprehension	78%	16%	6%
1058 – 52 min	208	**Numeracy** – group, N = 6. Number bonds – practical, then worksheet	64%	20%	16%
1358 – 25 min	100	**Outdoor Games** – class in playground. Bat & ball skills	43%	35%	22%
Wed 25 Sep 0916 – 48 min	192	**Numeracy** – group, N = 5. Number bonds – mainly practical, used coins	51%	40%	9%
1100 – 60 min	240	**Literacy –** group, N = 4 (TA, SENCO) 6 short, varied activities, no writing	88%	7%	5%
Mon 30 Sep 0917 – 50 min	200	**Numeracy** – group, N = 4. Number bonds to 10, games add & subtract	35%	21%	44%
1057 – 63 min	252	**Literacy** – group, N = 4 (TA, SENCO) spelling, Word Attack, comprehension	80%	4%	16%
Thur 10 Oct 0930 – 59 min	236	**Literacy** – group, N = 3 (SENCO room) Word activity, reading, writing, IT	65%	26%	9%
1053 – 65 min	260	**Numeracy** – group, N = 5 Shape, lines of symmetry, 2X table, game	73%	13%	14%
Tues 15 Oct 1053 – 56 min	224	**Numeracy** – group, N = 5 Symmetry; 2D, 3D shapes, practical task	55%	32%	13%
Wed 23 Oct 0920 – 65 min	260	**Numeracy** – group, N = 6. Recap weight; measuring tasks; tables; games	73%	10%	17%
1315 – 50 min	200	**Science** – class group Recap term's work; assessment task	53%	36%	11%
1415 – 18 min	72	**Art/DT** – half class, N = 14 Draw, design mosaic	76%	21%	3%
1435 – 20 min	80	**Music** – half class, N = 14 (Music T) Steel band practice in hall	81%	10%	9%
Tues 5 Nov 0911 – 20 min	80	**PE (Dance)** – class in hall Movements to start of Kylie song	44%	25%	31%
0937 – 25 min	100	**RE** "People who influence us" Class discussion, write in RE books	62%	29%	9%
1318 – 28 min	112	**RE (part 2)** class. Finish from earlier lesson; T reads RE story	35%	30%	35%
Fri 15 Nov 0912 – 53 min	212	**Literacy** – group, N = 3 Magic 'e' activities; cut & stick; story	66%	14%	20%
1020 – 28 min	112	**Whole school Assembly** In school hall	28%	34%	38%
1120 – 40 min	160	**Numeracy** group, N = 5 (2 x TA). Place values; practical multiplication, division	62%	18%	20%

Fixed Interval Sampling (Carl – main phase) (Page 2 of 2)

Date, time, duration	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inattention	Hyperactivity /Impulsivity
Thu 21 Nov 0927 – 63 min	252	**Literacy** – group, N = 5 (2 x TA) Magic 'e'; T reads story, write as a play	59%	19%	22%
1103 – 59 min	236	**Numeracy** – group, N = 6 (2 x TA) Place values; money – practical, sums	25%	50%	25%
Mon 25 Nov 0907 – 15 min	60	**KS2 Assembly –** in hall HT awards individual merit badges	42%	30%	28%
1112 – 58 min	232	**Literacy** – group, N = 4 (SENCO, 2 x TA) Guessing game; story; worksheets	63%	23%	14%
Wed 4 Dec 0920 – 40 min	160	**Numeracy** – group, N = 7 Number line sums, practical and written	78%	18%	4%
1115 – 20 min	80	**Literacy** – group, N = 4, towards end of lesson, guided shared reading	55%	28%	17%
1313 – 50 min	200	**Science** – class. 'Insulation' – class discussion, experiment	66%	30%	4%
Mon 16 Dec 0958 – 33 min	132	**Numeracy** – group, N = 7. Tables; number line sums, odds + evens, HTU	65%	32%	3%

Appendix 9.2

Fixed Interval Sampling (Carl – follow up phase) (Page 1 of 2)

(Recording of Target pupil's predominant behaviour for 15-second intervals over a fixed time period)

Date, time, duration	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inattention	Hyperactivity /Impulsivity
Mon 15 Sept 0907 – 58 min	232	**Literacy** group, N = 3, TA. (Brain gym) spellings, guided reading, handwriting	82%	9%	9%
1007 – 53 min	212	**Numeracy** group, N = 3, TA 'Time' – clock activity, days, months, Fizz game	66%	9%	25%
Wed 24 Sept 0903 – 58 min	232	**Literacy** group, N = 4, TA Spelling; verbs oral, written; g. reading	79%	13%	8%
1124 – 52 min	208	**Numeracy** group, N = 4, TA 'Time' oral, worksheet – months; clocks	68%	22%	10%
1410 – 50 min	200	**PSHE** – class group, police officer STAR Drugs project – oral, workbooks	73%	15%	12%
Tues 30 Sept 0910 – 52 min	208	**Literacy** – group, N = 4, TA Lit. targets, spellings, group reading	65%	21%	14%
1005 – 56 min	224	**Numeracy** – group, N = 4. 'Time' – oral, worksheets; pairs, dominoes	54%	25%	21%
1124 – 52 min	208	**RE** – class (Other Y6 T) 'Lost & Found', story, meaning	63%	23%	14%
Fri 10 Oct 0903 – 18 min	72	**Whole school Poetry Assembly -** in hall Includes each KS2 class reciting a poem	79%	19%	1%
0927 – 92 min	368	**Literacy –** group, N = 4 SSA starts lesson Spellings, handwriting, 'verbs', sentences	69%	14%	17%
1122 – 53 min	212	**Numeracy** – group, N = 4 SSA, TA Number patterns to 20, practical, written	71%	14%	15%
1336 – 40 min	160	**Outdoor Games –** 2 x Y6 classes, 2 x Ts Warm up, individual & team games	66%	24%	10%
Thur 16 Oct 0905 – 55 min	220	**Literacy** group - Spelling, handwriting, group compose 'newspaper article', write	82%	13%	5%
1006 – 50 min	200	**Numeracy** group – practical 'time' work, partitioning – oral, then written work	80%	13%	7%
1127 – 48 min	192	**Science** – class. 'Micro-organisms', oral, then written work – virus, bacteria, fungi	80%	14%	6%
Tues 4 Nov 0921 – 51 min	204	**Literacy** – class, then with support Independent writing - assessment	82%	11%	7%
1121 – 55 min	220	**Numeracy** group – 'time' mental warm up; oral, practical, written add + subtract	73%	24%	3%
1444 – 15 min	60	**KS2 Assembly** – Hymn Practice in school hall	52%	38%	10%

Fixed Interval Sampling (Carl – follow up phase) (Page 2 of 2)

Date, time, duration	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inattention	Hyperactivity /Impulsivity
Fri 14 Nov 0906 – 23 min	92	**Whole school assembly** – in school hall, taken by HT, includes 'Good Samaritan'	42%	36%	22%
1020 – 42 min	168	**Literacy** – group – 'form an independent opinion after discussion' - oral, written	58%	33%	9%
1127 – 50 min	200	**Numeracy** – group – add, subtract 9, 11 – oral and game to reinforce strategy	73%	19%	8%
1337 – 16 min	64	**ICT** – working with a partner on a laptop – multimedia task	84%	11%	5%
Thur 20 Nov 0911 – 51 min	204	**Literacy** group – spellings, handwriting, guided reading, 'project' discussion	82%	16%	2%
1007 – 55 min	220	**Numeracy** group – revision of strategies used to solve problems: practical, written	72%	24%	4%
Wed 26 Nov 0904 – 58 min	232	**Numeracy** group – 2 x table; 10, 1, more, less than; money – coins, correct change	70%	26%	4%
1006 – 55 min	220	**Science** – separating liquids, ink colours, 'chromatography' experiment	76%	14%	10%
1336 – 25 min	100	**ICT** (part 2) – design, prepare Powerpoint presentation, work in groups of 3	69%	26%	5%
1410 – 23 min	92	**Music** (half class group) – steel pans, in music room with music teacher	59%	29%	12%
Thur 4 Dec 0908 – 53 min	212	**Literacy** group – guided reading; letter layout – oral, write final sentence	76%	21%	3%
1004 – 58 min	232	**Numeracy** group – 'money' – use £1, 10p, 1p coins, practical, written notation	57%	28%	15%
(Ofsted obsn) 1354 – 35 min	140	**DT** class working in 2 groups, target child modifying chassis, add motor	88%	9%	3%
Tues 9 Dec 1039 – 18 min	72	**Line dancing** – class learn - some will perform during Christmas performance	65%	35%	0
1416 – 42 min	168	**Rehearse KS2 Xmas performance** – in school hall	79%	16%	5%

Instantaneous Time Sampling Summary (Carl – main phase) (Page 1 of 2)

(Observations of Target and Comparison behaviours recorded at 30-second intervals for a 10-minute period, or as stated)

Date, time recording period began	Lesson	Recordings out of 20			Recordings out of 20		
		Target			Comparison		
		0	Inattn	Hy/Im	0	Inattn	Hy/Im
Wed 25 Sep	**History** - class **'**The Celts'						
1313	**Start** – T reading text, at tables	7	6	7	17	2	1
1331	**Middle** – writing in history books	16	2	2	15	4	1
1346	**End** – finish writing, draw picture	20	0	0	20	0	0
	Music – half class, N = 13						
1407	Classroom – listening activity (T)	5	10	5	16	3	1
1435	Hall – steel band (peripatetic T)	16	2	2	17	2	1
Mon 30 Sep	**DT/ICT** – class						
1315	**Start** - recap design instrument	10	6	4	18	1	1
1405	**Middle** – make, under supervision	15	5	0	19	1	0
1435	**End** – finish, tidy up	10	2	8	16	2	2
	Literacy – class						
1449	T reads part of story, after DT	6	6	8	14	4	2
Thu 10 Oct	**DT/ICT** – class						
1318	**Start** – making instrument	17	2	1	19	1	0
1400	**Middle** – as above (Control on PC)	19	1	0	19	1	0
1440	**End** – finish, tidy up	10	8	2	14	6	0
Tue 15 Oct	**History** – class						
0940 - 20min	Finish worksheet, stick in book	14/40	14/40	12/40	22/40	13/40	5/40
	KS2 Assembly						
1010 - 20min	Practising for Harvest festival	13/40	14/40	13/40	29/40	8/40	3/40
	Literacy – class group						
1310	Session on singular/plural words	1	12	7	18	1	1
	Science – class group						
1403	**Start** – writing down ideas	6	5	9	16	3	1
1427	**Middle –** share ideas with class	6	7	7	15	3	2
1440	**End –** draw cross section of fruit	5	9	6	14	4	2
Wed 23 Oct	**Literacy** group, N = 3 (TA ,SENCO)						
1102	**Start** – Spelling test	20	0	0	20	0	0
1120	**Middle** – 'Busy bee' game	15	0	5	20	0	0
1144	**End** – reading test worksheet	18	1	1	20	0	0

Instantaneous Time Sampling Summary (Carl – main phase) (Page 2 of 2)

Date, time recording period began	Lesson	Recordings out of 20			Recordings out of 20		
		Target			Comparison		
		0	Inattn	Hy/Im	0	Inattn	Hy/Im
Tues 5 Nov	**Assembly** – KS2						
1007 - 20min	Hymn practice in hall	10/40	9/40	21/40	30/40	5/40	5/40
	Numeracy – group, N = 7						
1057	**Start** – missing numbers in grid	15	5	0	20	0	0
1125	**Middle –** sequences, practical	4	6	10	17	1	2
1145	**End –** sequences, work in books	16	3	1	19	1	0
Fri 15 Nov	**Outdoor Games** – class						
1322 - 20min	Warm-up, recap rugby skills, work in pairs, then 4s, team game	28/40	10/40	2/40	33/40	4/40	3/40
	Number Club – class						
1400	Short weekly activity, pupils mark each others work	12	6	2	16	4	0
Thu 21 Nov	**History** – class 'Roman towns'						
1318	**Start** – T intro comparison task	11	6	3	16	3	1
1334	**Middle** – worksheets	10	6	4	16	4	0
1348	**End –** worksheet	12	6	2	18	2	0
Mon 25 Nov	**Numeracy** – group, N = 4						
0929	**Start** magic square, insert numbers	15	3	2	17	3	0
0950	**Middle** – fractions worksheet	13	7	0	15	5	0
1015	**End** – second worksheet	15	3	2	17	2	1
	Art – group, N = 5 (TA + parent) (Working in Art area, off classroom)						
1400	**Start** – apply hot wax to Batik	18	1	1	19	1	0
1424	**Middle** – draw on piece of material	17	3	0	16	4	0
1444	**End** – reapply hot wax	18	2	0	19	1	0
Wed 4 Dec	**KS2 Singing Practice**, in hall						
1015 - 20min	Rehearse Christmas songs	17/40	9/40	14/40	30/40	7/40	3/40
Mon 16 Dec	**Literacy/Art** – class						
1117	**Start –** Christmas word activity	8	10	2	15	5	0
1130	**Middle** – 6min Lit, 4min Art	15	4	1	13	6	1
1150	**End** – Art, sticking glitter on card	18	0	2	18	1	1

Appendix 9.4

Instantaneous Time Sampling Summary (Carl – follow up phase) (Page 1 of 2)

(Observations of Target and Comparison behaviours recorded at 30-second intervals for a 10-minute period)

Date, time recording period began	Lesson	Recordings out of 20			Recordings out of 20		
		Target			Comparison		
		0	Inattn	Hy/Im	0	Inattn	Hy/Im
Mon 15 Sep	**Dance –** class in school hall						
1136	**Start** – warm up, Tudor dance	5	6	9	13	5	2
1146	**End** – modern dance, cool down	9	5	6	15	2	3
	History – The Victorians						
1336	**Start –** watch video, two classes	16	1	3	20	0	0
1357	**Middle –** class 'brainstorming'	3	8	9	11	6	3
1428	**End** – writing, worksheets	5	12	3	13	7	0
Wed 24 Sep	**Science** – Forces						
1009	**Start** – T measures objects in air	15	1	4	19	0	1
1027	**Middle** – measures in water	12	7	1	17	2	1
1042	**End** – recap results orally	11	7	2		5	1
	Music – learn African tribal song						
1312	**Start** – intro, learn song	13	3	4	19	1	0
1329	**Middle** – sing in 2 parts, then 4	11	6	3	16	4	0
1343	**End** – sing in 4 different parts	10	4	6	19	1	0
Tue 30 Sep	**History** – The Victorians (+SSA)						
1327	**Start** – recap from previous video	8	7	5	15	5	0
1347	**Middle –** start writing	14	5	1	16	4	0
1401	**End –** continue writing	12	6	2	16	4	0
	Assembly – Hymn practice						
1443	KS2 in school hall	4	8	8	18	1	1
Thu 16 Oct	**Art –** 'Portrait of a Nation' collage						
1342	**Start –** introduction, on carpet	6	5	9	16	3	1
1409	**Middle –** all cutting out pictures	19	0	1	20	0	0
1440	**End –** on carpet, class discussion	10	4	6	16	3	1
Tues 4 Nov	**Literacy** - class group						
0907	Introduction to independent writing – mind mapping	10	9	1	16	4	0
	Ofsted Questionnaire						
1032	**Start** – T reads out questions, individuals write answers	17	2	1	19	1	0
1042	**End –** write down anything else you want to say about school	14	5	1	16	4	0

Instantaneous Time Sampling Summary (Carl – follow up phase) (Page 2 of 2)

Date, time recording period began	Lesson	Recordings out of 20			Recordings out of 20		
		Target			Comparison		
		0	Inattn	Hy/Im	0	Inattn	Hy/Im
Fri 14 Nov	**ICT** – in classroom						
1313	**Start –** T intro record sheets	14	4	2	17	1	2
1358	**Middle –** design web page	9	6	5	20	0	0
1419	**End –** IT Wordsearch	13	5	2	18	2	0
Thu 20 Nov	**Science** – separating solids						
1130	**Start** – class discuss 'implement'	5	12	3	13	6	1
1150	**Middle** – writing, T intro exp'ts	16	4	0	18	2	0
1202	**End** – groups of 4, experiments	20	0	0	20	0	0
We 26 Nov	**Literacy** – 'Reports'						
1122	**Start –** groups, sentences	12	4	4	18	1	1
1138	**Middle –** discuss report features	9	9	2	19	1	0
1152	**End –** class offer suggestions	4	12	4	15	4	1
	ICT (part 1)						
1309	**Start –** T intro's objectives	7	9	4	18	2	0
1321	**Middle** – T demo's task, discuss	4	10	6	18	2	0
Thur 4 Dec	**Science – '**dissolving'						
1123	**Start** – Recap, intro experiments	11	5	4	18	2	0
1145	**Middle** – experiments in groups 4	10	3	7	18	2	0
1203	**End –** discuss results, groups/class	9	6	5	17	3	0
1335	**DT** – first part of lesson						
(Ofsted obsn)	**Start** – T explains two objectives	17	3	0	20	0	0
Tues 9 Dec	**Singing Practice** – in classroom						
0927	**Start – }**Sing Christmas songs,	9	10	1	13	7	0
0937	**End – }**with cassette tape music	9	10	1	14	6	0
	History – Y6 group, R classroom						
1000	**Start – }** watch video – photos of	17	3	0	19	1	0
1019	**End – }** Old Worcester	10	8	2	16	3	1
	Art – start to design calendar						
1315	**Start –** T1 intro to Y6 group	13	5	2	18	1	1
1334	**Middle –** draw lines, T2 instructs	12	5	3	20	0	0
1346	**End –** T2 demonstrates art work	7	9	4	18	2	0

Appendix 10.1

Fixed Interval Sampling (David – main phase)

(Recording of Target pupil's predominant behaviour for 15-second intervals over a fixed time period)

Date, time, duration	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inattention	Hyperactivity/ Impulsivity
Spring term Fri 17 Jan 0944 – 55 min	220	**Numeracy** – class group (ST) 2 teams, game - carpet, then written sums	77%	16%	7%
1115 – 60 min	240	**Literacy**- class (ST) Alliterative poem, suggestions on board, copy or own ideas	65%	28%	7%
Thur 30 Jan 1130 – 49 min	196	**Literacy –** LSB group (7) SENCO High frequency words, test, then game	80%	8%	12%
1400 – 65 min	260	**Nurture group** (6) (TA) Social skills games; **Art ICT** work in LSB room	87%	8%	5%
Wed 5 Feb 0945 – 60 min	240	**Numeracy (ICT)** – class in ICT suite 'Time' programmes, D works with SSA	80%	8%	12%
Tues 11 Feb 1333 –35 min	140	**Art** - Celtic patterns (topic); copy out poems for display	74%	17%	9%
Fri 7 Mar 0916 –16 min	64	**Assembly** – whole school in hall, taken by KS1 class, theme 'Pancake Day'	83%	6%	11%
0948 – 50 min	200	**Numeracy (ICT) –** class work in pairs, multiplication programmes, mouse skills	94%	1%	5%
Mon 24 Mar 1132 – 35 min	140	**Literacy (ICT)** – Big Book 'Fables', then work in 2s add punctuation	81%	3%	16%
1337 – 35 min	140	**History -** 2 classes watch videos on The Invaders; T shows, discusses wax tablets	66%	23%	11%
Summer term Thur 1 May 1414 – 25 min	100	**Nurture group** (8) – social skills games in LSB room with TA	93%	1%	6%
1450 – 20 min	80	**ICT – writing task in LSB** writing to go with photo for display	97%	0	3%
Thu 22 May 1125 – 45 min	180	**Literacy – LSB**, N = 6 Mainly oral session, then writing in pairs on PC	86%	3%	11%

Appendix 10.2

Fixed Interval Sampling (David – follow up phase)

(Recording of Target pupil's predominant behaviour for 15-second intervals over a fixed time period)

Date, time, duration	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inattention	Hyperactivity/ Impulsivity
Spring term **Tues 13 Jan** 0838 – 52 min	208	**Art –** 'Shape Explosion' Class in Art/DT room	86%	14%	0
0934 – 52 min	208	**Music** – African music –listening, singing, instruments, writing	82%	16%	2%
1048 – 47 min	188	**Literacy** – (set 7/7), N = 12, T = SENCO Onomatopoeia – oral, written work	82%	17%	1%
1143 – 49 min	196	**Numeracy** – (Set 6/6) Equivalent fractions - oral, game in pairs	70%	23%	7%
Mon 2 Feb 0936 – 49 min	196	**Numeracy –** tables test; 'money' oral Q&A session; 'Coin card game' in pairs	41%	35%	23%
1142 – 45 min	180	**ICT** – Internet search engine 'Google'; databases 'Junior Pinpoint' programme	74%	17%	9%
1437 – 17 min	68	**Assembly** (notices) – whole school, in hall	87%	12%	1%
Tues 23 Mar 1046 – 49 min	196	**Literacy** – group, N=10 – word building – oral, written; dictation, sentences	83%	15%	2%
1144 – 40 min	160	**Numeracy** – multiplication: test scores & oral, multiples, worksheet	50%	37%	13%
1401 – 27 min	108	**PE** – in gym - warm up; practice basketball skills, in 2s, then 3s	87%	8%	5%
Summer term **Thur 6 May** 1045 – 45 min	180	**Numeracy** - timed class game; Carroll diagrams - oral, practical worksheet	64%	23%	13%

Appendix 10.3

Instantaneous Time Sampling Summary (David – main phase) (Page 1 of 3)

(Observations of Target and Comparison behaviours recorded at 30-second intervals for a 10-minute period, or as stated)

Date, time recording period began	Lesson	Recordings out of 20			Recordings out of 20		
		Target			Comparison		
		0	Inattn	Hy/Im	0	Inattn	Hy/Im
Thur 30 Jan	**Numeracy** – 'Money'						
0945	**Start** – on carpet, introduction	10	10	0	17	3	0
1016	**Middle** – work at tables in books	18	2	0	17	3	0
1032	**End –** tables, then carpet - recap	12	4	4	18	1	1
Wed 5 Feb	**Literacy** – dictionary work						
1120	**Start** – intro, on carpet	12	4	4	15	2	3
1145	**Middle** – work at tables in books	18	0	2	20	0	0
1201	**End** – on carpet, recap work done	9	4	7	17	3	0
	Art (ICT) – 'Colour Magic'						
1411	**Start** – on carpet, T demonstrates	18	1	1	19	1	0
1430	**Middle** – working in 2s on PCs	17	2	1	18	2	0
1446	**End** – PCs, then carpet	12	1	7	16	3	1
Tues 11 Feb	**Assembly** – whole school in hall						
0913 - 20min	HT intro, then hymn practice	28/40	9/40	3/40	38/40	2/40	0
	Numeracy – problem solving						
0937	**Start** –carpet, use ind wht boards	17	2	1	19	1	0
1006	**Middle** – tables, work in books	18	1	1	18	2	0
1026	**End** – carpet, go over answers	12	7	1	15	5	0
	Literacy – 'Traditional Stories'						
1119	**Start –** carpet, recap adjectives	5	5	10	18	2	0
1146	**Middle –** tables, writing in books	14	3	3	18	2	0
1200	**End –** tables, then carpet	9	7	4	16	4	0
Fri 7 Mar	**Literacy –** story endings						
1121	**Start** – carpet, T introduction	15	1	4	18	0	2
1148	**Middle –** write on whiteboards	17	2	1	17	3	0
1158	**End –** carpet, some read out work	17	3	0	16	4	0
	History – 2 classes, Romans video						
1334 - 20min	Watch TV, history topic work	36/40	4/40	0	40/40	0	0
Mon 24 Mar	**Numeracy –** fractions, decimals						
0948	**Start** – practical intro, carpet	14	4	2	17	2	1
1016	**Middle** – worksheets at tables	18	0	2	14	6	0
1029	**End** – finish work, then on carpet	15	2	3	15	4	1
	Family Links (PHSE)						
1440	**{**Class sit in circle on carpet, T	17	0	3	17	0	3
1450	**{**encourages discussion of 'good **{**and bad secrets' (Circle Time)	19	0	1	19	0	1

Instantaneous Time Sampling Summary (David – main phase) (Page 2 of 3)

Date, time recording period began	Lesson	Recordings out of 20			Recordings out of 20		
		Target			Comparison		
		0	Inattn	Hy/Im	0	Inattn	Hy/Im
Summer							
Wed 30 Apr	**Numeracy** – class revision						
0945	**Start –** carpet, warm up questions	13	6	1	16	3	1
1012	**Middle –** at tables, work in books	17	2	1	19	1	0
1033	**End –** carpet, then in circle	13	5	2	17	3	0
	Literacy – report writing						
1118	**Start** – on carpet, recap yesterday	6	12	2	13	5	2
1138	**Middle –** tables, writing report	17	2	1	17	3	0
1154	**End** – share work on carpet	9	6	5	16	4	0
Thur 1 May	**Numeracy – Y4 SATs practice** N = 35, (SF, Y3/4 T & SSA)						
0952	**Start** – carpet, warm up questions	15	0	5	19	1	0
1022	**Middle** – as above, then to tables	7	5	8	11	8	1
1035	**End –** seating sorted, start 'test'	14	0	6	15	2	3
	Literacy – Y4 SATs practice (35)						
1133	**Start –** carpet, non-fiction/fiction	10	5	5	18	2	0
1155	**Middle –** writing, separate tables	18	0	2	18	2	0
1205	**End –** as above, stickers awarded	11	2	7	15	2	3
Mon 12 May	**'Rainbow' assembly –** in hall						
0911	**Start** – certificates awarded	11	4	5	19	1	0
0921	**End –** as above, hymn, prayer	10	6	4	15	4	1
	Numeracy – half Y4 group (17)						
0949	**Start** – on carpet, number bonds	14	4	2	18	2	0
1016	**Middle –** practical work at tables	10	8	2	16	4	0
1028	**End** – on carpet, recap	6	9	5	17	3	0
	Literacy – half Y4 + some Y3 (21)						
1119	**Start** – in circle, carpet, pronouns	13	5	2	17	1	2
1137	**Middle –** tables, game in pairs	14	2	4	18	2	0
1159	**End –** carpet – 'Hot Seat' game	12	2	6	15	1	4
	DT – Design 'picnic' container						
1339	**Start –** on carpet, T introduction	15	4	1	15	5	0
1353	**Middle – {**working at tables on	16	3	1	17	3	0
1405	**{**making prototype model	20	0	0	19	1	0
1428	**End –** circle, carpet, show work	10	4	6	10	6	4

Instantaneous Time Sampling Summary (David – main phase) (Page 3 of 3)

Date, time recording period began	Lesson	Recordings out of 20			Recordings out of 20		
		Target			Comparison		
		0	Inattn	Hy/Im	0	Inattn	Hy/Im
Mon 12 May	**Science** – Plants						
1444	**Start –** on carpet for introduction	11	5	4	15	4	1
1454	**Middle** – carpet, discussion	11	3	6	17	1	2
1504	**End –** carpet, as above	6	8	6	9	8	3
Thu 22 May	**Numeracy** – capacity, < >						
1000	**Start –** intro on carpet, then work	10	2	8	15	4	1
1018	**Middle –** at tables in maths books	18	1	1	15	4	1
1030	**End –** on carpet	13	2	5	17	0	3

Appendix 10.4

Instantaneous Time Sampling Summary (David – follow up phase)

(Observations of Target and Comparison behaviours recorded at 30-second intervals for a 10-minute period, or as stated)

Date, time recording period began	Lesson	Recordings out of 20			Recordings out of 20		
		Target			Control		
		0	Inattn	Hy/Im	0	Inattn	Hy/Im
Spring							
Mon 2 Feb	**Science –** 'Care of Teeth'						
1045	**Start –** oral Q&A session, OHP	9	9	2	17	3	0
1113	**Middle** – intro to written work	9	9	2	16	4	0
1123	**End** – individual written work	11	8	1	20	8	0
Tue 23 Mar	**Music**						
0941	**Start** – worksheet, treble clef, notes	15	5	0	19	1	0
0959	**Middle** – in 2s, keyboard practice	13	7	0	18	2	0
1018	**End** – oral recap notes, positions	12	8	0	13	7	0
Summer							
Thu 6 May	**DT -** Sewing						
1146	**Start –** T intro objectives	8	10	2	18	2	0
1158	**Middle –** {D = write planning list	19	1	0	20	0	0
	{C = cut out material						
1212	**End –** {D = cut out pattern	13	6	1	17	3	0
	{C = cut out material						
	RE – "Community"						
1340	**Start –** T intro, class - oral ideas	6	11	3	16	4	0
1407	**Middle –** oral, copy from board	16	4	0	16	4	0
1420	**End –** devise & write timetable for a Mosque	8	12	0	14	6	0

D: David C: Comparison pupil

Appendix 11.1

Fixed Interval Sampling (Edward – main phase) (Page 1 of 2)

(Recording of Target pupil's predominant behaviour for 15-second intervals over a fixed time period)

Date, time, duration	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inattention	Hyperactivity/ Impulsivity
Tu 14th Jan 0936 – 15 min	60	**Literacy** group (N = 8) within main class 'Look, cover, write' spellings	80%	20%	0
1132 – 27 min	108	**Numeracy** class group (N = 30) 'Time' worksheet; game; number champ.	68%	17%	15%
Fri 31st Jan 0932 – 45 min	180	**Literacy group** (N = 9) SEN T, IT room Blends, word endings worksheet, game	72%	16%	12%
1044 – 15 min	60	**Numeracy intro** – class group, ST Practical class bar chart activity	48%	38%	14%
1109 – 19 min	76	**Music** – class group, Music T, T, TA in technology room. Singing, composing	86%	9%	5%
1446 – 14 min	56	**Celebration assembly** – whole school, hall. Certificates, stickers awarded	79%	7%	14%
Thur 6th Feb 1003 **–** 12 min	48	**Assembly** – whole school, hall. Visitors **–** guitar – story of Lost Sheep	15%	46%	39%
1048 – 35 min	140	**Dance** – class group, in hall Warm up, moves, to music, in groups	61%	33%	6%
Wed 12th Feb 1039 – 25 min	100	**Literacy** – class group, intro on carpet, then at tables for handwriting practice	70%	13%	17%
1106 – 55 min	220	**Numeracy** – class, oral multiplication qs, then at tables in groups, workbooks	37%	24%	39%
1337 – 50 min	200	**PE** – class in hall, gymnastics T + T Warm up, exercises, travelling (rolls, etc)	82%	13%	5%
Wed 26th Feb 0901 – 56 min	224	**Literacy** – class on carpet instructions for making puppet, then gps practise spelling	64%	33%	3%
Tue 4th Mar 1048 – 30 min	120	**Numeracy –** worksheet at tables in groups, then class on carpet (ST)	38%	38%	24%
1122 – 27 min	108	**Science** (ST) **'**Plants' **–** class on carpet for intro, tables to label parts on worksheet	39%	44%	17%
1323 – 35 min	140	**Art** – class group (ST) pics of Daffodils, other flowers, using pastels, black paper	72%	16%	12%
We 26th Mar 0940 **–** 45 min	180	**Literacy** – class intro, carpet, writing task and handwriting at tables in groups	80%	15%	5%
1003 – 16 min	64	**Assembly** – whole school in hall **–** hymn, story of 'The Sower and the Seed', prayer	81%	16%	3%

Fixed Interval Sampling (Edward – main phase) (Page 2 of 2)

Date, time, duration	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inattention	Hyperactivity/ Impulsivity
We 2nd Apr 1002 –13 min	52	**Assembly** – whole school in hall – hymn, story of Judas, prayer	67%	16%	17%
1045 – 55 min	220	**Numeracy** – class on carpet, then in group - sums from blackboard	28%	56%	16%
1142 – 18 min	72	**Literacy** – handwriting, in groups at tables	76%	11%	13%
1407 – 20 min	80	**RE –** class working at tables on picture after hearing Garden of Gethsemane story	55%	26%	19%
We 9th Apr 1115 – 20 min	80	**Art** – class work at tables, decorate paper 'handle' for Easter baskets, use felt pens	71%	21%	8%
1350 – 15 min	60	**RE** – class on carpet, T reads more of the Easter story, asks questions	77%	8%	15%
SUMMER TERM					
Mon 16 Jun 0900 – 58min	232	**Literacy** – class group - Adverbs – oral session on carpet, then write at tables	53%	40%	7%
1001 – 14 min	56	**Assembly** – whole school in hall, local vicar leads 'Talents', hymn, prayer	36%	48%	16%
1329 – 40 min	160	**ICT** – class in ICT room, 2 groups: Use of 'pixie'; choose programmes on PC	69%	29%	2%

Appendix 11.2

Fixed Interval Sampling (Edward – follow up phase) (Page 1 of 2)

(Recording of Target pupil's predominant behaviour for 15-second intervals over a fixed time period)

Date, time, duration	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inattention	Hyperactivity/ Impulsivity
Fri 9 Jan 1040 – 16 min	64	**Literacy** – spelling test; oral recap of singular/plural spelling rules	44%	56%	0
1059 – 38 min	152	**Numeracy** – multiplication game; mental maths test	47%	47%	6%
1359 – 30 min	120	**PE (Dance)** – In hall - warm up, dance movements based on 'Invaders & Settlers'	38%	39%	23%
Fri 16 Jan 1114 – 36 min	144	**Literacy -** Spelling test; T reads part of 'Stig of the Dump' story	28%	45%	27%
1155 – 35 min	140	**Music** (Music T, in classroom) 'Accompaniment', listening, joining in	0	10%	90%
1441 – 16 min	64	**Celebration Assembly** – Y1 to Y4 in hall, certificates & stickers awarded	47%	20%	33%
Tues 20 Jan 1059 – 19 min	76	**PE (Indoor games)** – short lesson in hall, warm up, exercises, team games	47%	42%	11%
1125 – 43 min	172	**Numeracy** – partitioning, re-ordering, addition sums	25%	65%	10%
1330 – 68 min	272	**Geography** – 'Weather' – recap last week, hot/dry, to cold/frosty – video, write	27%	24%	49%
Wed 28 Jan 0900 – 72 min	288	**Literacy** – 'News'; work on 'Fables' – oral, written; T reads start 'The Iron Man'	81%	18%	1%
1015 – 20 min	80	**School Assembly** – taken by visitors, hymn; story 5 loaves + 2 fishes, prayer	74%	21%	5%
1335 – 53 min	212	**ICT** – in ICT room. Use 'Compose' programme – music; word puzzles	61%	26%	13%
Thur 5 Feb 1014 – 13 min	52	**KS2 assembly** – dance practice in hall	79%	15%	6%
1330 – 80 min	320	**DT** – pneumatics. Carry on making 'Moving Monsters' – design features, etc	42%	53%	5%
Mon 9 Feb 0907 – 83 min	332	**Literacy** – alliterative poems, recap, all read poem, carry on writing poem neatly	65%	34%	1%
1327 – 30 min	120	**Literacy** (ALS group, N = 4, TA) in small withdrawal room. High frequency words	75%	23%	2%
1402 – 19 min	76	**Art** – painting, using end of brush dipped in paint to produce dots on black paper	84%	16%	0

Fixed Interval Sampling (Edward – follow up phase) (Page 2 of 2)

Date, time, duration	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inattention	Hyperactivity/ Impulsivity
Wed 25 Feb 0900 – 71 min	284	**Literacy** – news; 'creation myths'- discuss ideas, write sentences	69%	28%	3%
1055 – 54 min	216	**Numeracy** – 'weight' – oral class session, then individual worksheets	38%	48%	14%
Tues 2 Mar 0912 – 60 min	240	**PE** – in hall, Y4 T – warm up, ball skills, 'Benchball' tournament	67%	25%	8%
1018 – 18 min	72	**Assembly** – whole school in hall – local vicar – story of lost sheep	65%	15%	20%
Mon 8 Mar 0917 – 58 min	232	**Literacy** –'myths', opening sentences, etc; (then group – spellings, sentences)	49%	44%	7%
1334 – 27 min	108	**'Intra-school sports'** – class in four teams in hall for team games, relay races	86%	12%	2%
Thur 1 Apr 0925 – 35 min	140	**ICT** - 5 children finish data input; others choose PC programme or construction kits	90%	9%	1%
1016 – 14 min	56	**KS2 Assembly** - continuing Easter story. Children act out parts - empty tomb	64%	16%	20%
1143 – 15 min	60	**History/Literacy** - T reads part of fictionalised story of Boudicca	83%	14%	3%
1428 – 17 min 1447 – 13 min	68 52	**Literacy** - handwriting; T begins book "Fantastic Mr Fox"	57%	24%	19%

Appendix 11.3

Instantaneous Time Sampling Summary (Edward – main phase) (Page 1 of 3)

(Observations of Target and Comparison behaviours recorded at 30-second intervals for a 10-minute period, or as stated)

Date, time recording period began	Lesson	Recordings out of 20			Recordings out of 20		
		Target			Comparison		
		0	Inattn	Hy/Im	0	Inattn	Hy/Im
Tu 14th Jan	**Science** class group N = 30						
1100	'Materials' – worksheet at tables	9	9	2	16	4	0
	Art – class group – Make puppet						
1324	**Start** – Intro, on carpet	14	5	1	14	6	0
1400	**Middle** – work at tables	7	13	0	18	2	0
1413	**End** – at tables, book corner (E)	8	12	0	18	2	0
Fri 31st Jan	**Singing practice** – whole school						
0905- 20min	In hall, learning new hymn	24/40	7/40	9/40	39/40	0	1/40
	RE 'Good Samaritan' class group						
1320	**Start** – on carpet, T reads story	16	3	1	18	1	1
1330	**Middle** – as above, then at tables	10	1	9	18	2	0
1340	**End** – drawing picture at tables	14	5	1	19	1	0
	Literacy (spelling test) class gp						
1402	At tables, T tests, class write	13	4	3	17	3	0
Thur 6th Feb	**Literacy** class, then small gps = 6						
0901	**Start** – intro 'animals', on carpet	7	8	5	17	3	0
0929	**Middle -** groups (shared reading)	6	7	7	16	4	0
0941	**End** – groups (word game)	7	4	9	17	3	0
	Numeracy class, then small gps = 6						
1130	**Start** – carpet, practical activity	19	1	0	20	0	0
1140	**Middle** – as above, then in gps	6	12	2	17	2	1
1150	**End** – practical 'division' activity	6	7	7	16	4	0
We 12th Feb	**Literacy -** class, then groups						
0900	**Start** – carpet 'Materials' book	4	9	7	16	4	0
0937	**Middle** – writing at tables, groups	5	8	7	15	5	0
0950	**End** – carpet, children read work	11	2	7	17	1	2
	Assembly – whole school, in hall						
1003	Story of Lazarus, hymn, prayer	13	3	4	19	1	0
We 26th Feb	**Assembly** – whole school, in hall						
1000 - 20min	Visitor reads story, all hymn, prayer	27/40	11/40	2/40	36/40	4/40	0
	Literacy – class, then groups						
1044	**Start** – intro, on carpet	12	7	1	17	3	0
1054	**Middle** – at tables, handwriting	7	13	0	15	5	0
1104	**End** – at tables, handwriting	13	3	4	18	2	0

Instantaneous Time Sampling Summary (Edward – main phase) (Page 2 of 3)

Date, time recording period began	Lesson	Recordings out of 20			Recordings out of 20		
		Target			Comparison		
		0	Inattn	Hy/Im	0	Inattn	Hy/Im
26 Fe contd	**Numeracy** – class, then groups						
1116	**Start** – at tables, oral answers	11	4	5	18	1	1
1134	**Middle** – at tables, workbooks	2	9	9	16	2	2
1147	**End –** on carpet, recap	3	17	0	16	4	0
	PE – class in hall, gymnastics						
1340	**Start** – warm up exercises	13	7	0	20	0	0
1406	**Middle** – bunny hops, teams on mat	10	4	6	19	1	0
1418	**End** – headstand, in pairs	6	8	6	17	3	0
Tue 4th Mar	**Literacy** – class, then groups (ST)						
0908	**Start** – Read Big Book, on carpet	2	5	13	19	1	0
0928	**Middle** – at tables, writing tasks	10	8	2	15	5	0
0947	**End** – Recap, on carpet	7	4	9	19	1	0
We 26th Mar	**Numeracy** – class, then groups						
1042	**Start** – practical session on carpet	5	10	5	17	3	0
1100	**Middle** – workbooks, in group	14	3	3	19	1	0
1115	**End** – as above	11	4	5	16	4	0
We 2nd Apr	**Literacy** – class, then groups						
0859	**Start –** Read, discuss Big Book	8	3	9	18	2	0
0929	**Middle** – gps, reading, writing	11	3	6	17	3	0
0943	**End** – tables, then carpet – recap	10	7	3	18	2	0
We 9th Apr	**Literacy** – class						
0901	**Start –** on carpet, T reads story	13	4	3	16	4	0
0926	**Middle –** at tables, writing	4	10	6	16	4	0
1000	**End** – more extended writing	1	8	11	18	2	0
	Numeracy – class, then groups						
1040	**Start** – on carpet for intro	6	6	8	18	2	0
1057	**Middle** – at tables, coins activity	11	6	3	19	1	0
1137	**End –** carpet, recap	7	7	6	19	1	0

Instantaneous Time Sampling Summary (Edward – main phase) (Page 3 of 3)

Date, time recording period began	Lesson	Recordings out of 20			Recordings out of 20		
		Target			Comparison		
		0	Inattn	Hy/Im	0	Inattn	Hy/Im
SUMMER TERM							
Mo 16 June	**Science –** classroom, playground						
1038	**Start –** on carpet, discuss push/pull	4	14	2	15	5	0
1048	**Middle –** at tables, worksheet	8	11	1	18	2	0
1116	**End –** bounce balls in playground	9	9	2	19	1	0
	Numeracy – class, then groups						
1127	**Start** – at tables, practical work	9	5	6	19	1	0
1137	**Middle –** as above, then T asks Qs	4	11	5	16	4	0
1149	**End –** 'Number Champion', carpet	10	9	1	16	4	0
	Literacy – story at end of the day						
1438	**Start – {**T reads from 'The	16	3	1	19	1	0
1448	**End – {**Borrowers', class on carpet	14	6	0	15	5	0

E: Edward

Appendix 11.4

Instantaneous Time Sampling Summary (Edward – follow up phase) (Page 1 of 3)

(Observations of Target and Comparison behaviours recorded at 30-second intervals for a 10-minute period, or as stated)

Date, time recording period began	Lesson	Recordings out of 20			Recordings out of 20		
		Target			Comparison		
		0	Inattn	Hy/Im	0	Inattn	Hy/Im
Fri 9 Jan	**Music** – Music T, in hall						
0939	**Start** – pairs of children, rhythms	9	9	2	14	6	0
0951	**Middle –** listen, move to music	7	8	5	16	3	1
1001	**End** – instruments, movements	5	10	5	17	3	0
	Literacy						
1140	**Start** –T reads 'Stig of the Dump'	20	0	0	20	0	0
1205	**Middle }** guided reading, T works	15	5	0	18	2	0
1215	**End }** with Edward's group	17	2	1	19	1	0
	Celebration Assembly in hall						
1443 – 20 min	HT hands out certificates and stickers	12/40	14/40	14/40	32/40	8/40	0
Fri 16 Jan	**Singing Practice** hall, all school						
0903	**Start**	5	9	6	18	2	0
0913	**Middle**	9	8	3	17	3	0
0923	**End**	11	7	2	17	3	0
	PE – Dance, in hall						
1338	**Start** – warm up, hiding,	9	6	5	19	1	0
1358	**Middle –** exploring, attacking	5	2	13	19	1	0
1413	**(Edward sent out of hall)**						
Tues 20 Jan	**Literacy (1)**						
0911	**Start** – news, writing story	7	4	9	17	3	0
0926	**Middle** – writing story	17	1	2	19	0	0
1019	**End –** recap, some read out work	14	3	3	19	0	0
	Literacy (2) T reads 'Stig …'						
1441	Short carpet session at end of day	5	5	10	13	5	2
Wed 28 Jan	**Numeracy** – problem-solving						
1057	**Start –** at tables, oral session	8	11	1	15	5	0
1111	**Middle –** written work	8	11	1	16	4	0
1145	**End –** *(following play outside in the snow)* written work	10	9	1	19	1	0
	Literacy – class on carpet						
1438	**Start }** T begins to read 'The Iron	13	4	3	15	5	0
1448	**End }** Man'	18	1	1	18	2	0

Instantaneous Time Sampling Summary (Edward – follow up phase) (Page 2 of 3)

Date, time recording period began	Lesson	Recordings out of 20			Recordings out of 20		
		Target			Comparison		
		0	Inattn	Hy/Im	0	Inattn	Hy/Im
Thur 5 Feb	**Literacy**						
0902	Short 'News' session, on carpet	11	5	4	15	5	0
	Numeracy – 'co-ordinates'						
0919	**Start –** on carpet, oral Q&As	5	4	11	16	4	0
0938	**Middle –** written work at tables	11	8	1	18	2	0
0952	**End** – written work at tables	2	6	12	17	3	0
Mon 9 Feb	**Numeracy** – 'right angles'						
1124	**Start –** practical, then on carpet	4	8	8	19	1	0
1140	**Middle –** worksheet, at tables	10	8	2	18	2	0
1153	**End –** work in activity books	7	11	2	18	2	0
Wed 25 Feb	**Assembly** – whole school, visitors						
1015	**Start**	14	3	3	18	2	0
	ICT – data handling programme						
1334	**Start** – T demo on PC	18	2	0	19	1	0
1347	**Middle** – E on PC, C drawing	17	3	0	18	1	1
Tues 2 Mar	**Literacy –** acrostic poems						
1111	**Start –** oral session on carpet	13	4	3	19	1	0
1123	**Middle –** oral sentences	0	17	3	19	1	0
1136	**Middle –** writing at tables	12	6	2	17	3	0
1147	**End –** writing at tables	14	4	2	14	5	1
Mon 8 Mar	**Numeracy** – problem solving, +/-						
1040	**Start** – oral session on carpet	10	9	1	19	1	0
1104	**End** – work in pairs at tables, problem solving worksheet	13	5	2	19	1	0
	Literacy – handwriting, reading						
1126	**Start** – Carpet; writing at tables	12	7	1	19	1	0
1140	**Middle}** E – workbook,	9	7	4	20	0	0
1201	**End } C** – guided reading	11	9	0	19	1	0
	Art –History link 'Roman' clothes						
1414	**Start** – on carpet, T introduction	9	8	3	20	0	0
1428	**Middle –** draw (C – model)	12	6	2	20	0	0
1440	**End –** draw, then carpet session	10	7	3	18	2	0

Instantaneous Time Sampling Summary (Edward – follow up phase) (Page 3 of 3)

Date, time recording period began	Lesson	Recordings out of 20			Recordings out of 20		
		Target			Comparison		
		0	Inattn	Hy/Im	0	Inattn	Hy/Im
Thur 1 Apr	**Literacy –** 'news'						
0902	On carpet, individuals speak	11	5	4	1	3	1
	RE – signs and symbols (1)						
1057	**Start –** oral session, on carpet	7	5	8	15	5	0
1112	**End –** worksheet, at tables	15	2	3	16	3	1
	RE (2) **/Art –** Book of Memories						
1332	**Start –** carpet, T intro task, then at Tables, making booklet	15	5	0	19	1	0
1416	**End –** Symbols worksheet, oral session, at tables	11	8	1	18	2	0

E: Edward C: Comparison pupil

Appendix 12.1

Fixed Interval Sampling (Freddy – main phase) (Page 1 of 2)

(Recording of Target pupil's predominant behaviour for 15-second intervals over a fixed time period)

Date, time, duration	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inattention	Hyperactivity/ Impulsivity
Wed 7 May 0927 – 35 min	140	**Numeracy** (Nurture group N = 15 Y3/4) Count in 10s, addition tens /units, wksheet	85%	6%	9%
1045 – 60 min	240	**Literacy** (Nurture group N = 16, T, TA) Group reading, ea/ear words, worksheet	73%	15%	12%
1147 – 16 min	64	**Circle Time (PSHE)** (Nurture group 15) Recap rules, compliment game, 'copying'	96%	2%	2%
Wed 21 May 0907 – 15 min	60	**Hymn Practice** – whole school in hall Sing to taped music, words on OHP	68%	23%	9%
Comm'ns week 0927 – 50 min	200	**Literacy** (N group 15) Read story, colour in picture, design storyboard comic	59%	29%	12%
1039 – 50 min	200	**Art** (N group) Guessing game, recap story, perform song, start puppet design	62%	26%	12%
1130 – 37 min	148	**Literacy/PSHE** (N group) (Lit. adviser) Story, discuss feelings, point of view	53%	20%	27%
1310 – 47 min	188	**Art** (N group) colour in leaves for class display, make bird masks, stone 'spiders'	86%	9%	5%
Thur 5 June 0916 – 65 min	260	**Literacy** (Nurture group) Months, Big Book, information writing	57%	37%	6%
1039 – 52 min	208	**Numeracy** Group, N = 20 (Y3/4) T, TA HTU – practical, then worksheets in pairs	48%	28%	24%
1134 – 38 min	152	**Circle time (PSHE)** Nurture group Gentle exercises, T reads 'Pandora's Box'	49%	31%	20%
Mon 9th Jun 0929 – 45 min	180	**Numeracy** Group, N = 22 (Y3/4) HTU, count in 2s, odds/evens, work books	52%	30%	18%
1045 – 80 min	320	**Literacy** (Nurture Group) Recap school trip, choose 4 best parts **–** draw, keywords	72%	20%	8%
Fri 20 June 0918 – 55 min	220	**Numeracy** group, N=20 (Y3/4) Practical subtraction, then work in books	59%	23%	18%
1114 – 30 min	120	**Outdoor Games** – field (Y4+5 Y3, non swimmers) Teams – bat & ball games	70%	17%	13%
1147 – 20 min	80	**ICT** (short session after Games lesson) Free choice of PC 'games'	92%	4%	4%
1313 – 59 min	236	**Literacy** (N group), N=14 Spelling, Big Book, writing in books	72%	19%	9%
1419 – 25 min	100	**Golden Time** (N group) Team game, choosing time (PC game), story, eat fruit	88%	11%	1%
Tue 24 June 1043 – 80 min	320	**Literacy** (N group) No TA today, just T Report writing - practical & written work	51%	33%	16%

Fixed Interval Sampling (Freddy – main phase) (Page 2 of 2)

Date, time, duration	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inattention	Hyperactivity / Impulsivity
Thu 3 July 0924 – 15 min	60	**Literacy** (N group). Practise signing; missing words worksheet	70%	23%	7%
1044 – 48 min	192	**Numeracy** group, (ST). Practical multiplication & division tasks	57%	29%	14%
1135 – 30 min	120	**Literacy** (N group) T (TA in meeting) Design poster for School Summer Fair	67%	27%	6%
Wed 9 July 0931 – 39 min	156	**Numeracy** group, Multiples of 4, oral and worksheet	37%	27%	36%
1137 – 26 min	104	**'Relaxation'/Music/Literacy** (N group) Relax to music, imagine/ word chain	71%	14%	15%
1321 – 80 min	320	**History** (Y4 class) Continue story of Boudicca. T reads, then written work	60%	22%	18%
Thu 10 July 1321 – 25 min	100	**RE** (Y4 class) intro before Art activities, Hinduism – ceremonies, etc	37%	34%	29%
Fri 18 July 1045 – 20 min	80	**Literacy** (N group) TA, SSA Short session, TA reads story	73%	17%	10%
1109 –50 min	200	**PSHE** (N group) HT, SSA Watch 'hygiene' video, design poster	63%	19%	18%

Appendix 12.2

Fixed Interval Sampling (Freddy – follow up phase) (Page 1 of 2)

(Recording of Target pupil's predominant behaviour for 15-second intervals over a fixed time period)

Date, time, duration	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inattention	Hyperactivity/ Impulsivity
Tues 27 Apr 0906 – 54 min	216	**Numeracy** - set 4/5, N = 21 (T) Oral 8X table; fractions - smaller, greater than half	84%	10%	6%
1010 – 49 min	196	**DT** – group, N = 18. File work, continue sewing from previous lesson (ST)	63%	20%	17%
1125 – 47 min	188	**Geography** – class group. Start work on 'Out Local Area'- discuss, draft work	67%	15%	18%
1313 – 53 min	212	**Literacy** – set 5/5, N = 12. Reading, T reads story + questions; 'mind-mapping'	62%	27%	11%
1413 – 41min	164	**Science** – class group 'Sound' - practical work, string telephones, worksheets (T)	70%	17%	13%
Wed 5 May 0940 – 21 min	84	**Literacy** – set, N = 14. Words - number of syllables, vowels, 'look cover write'	67%	22%	11%
1124 – 53 min	212	**Literacy** – set, N = 14. Finish writing sentences; reading; video - watch, discuss	84%	8%	8%
1310 – 56 min	224	**Numeracy** – set, N = 21, ST. Money - set sums for partner - practical task; game	45%	25%	30%
1413 – 52 min	208	**RE** - class group Recap story Adam &Eve - rules; 10 commandments; worksheets	62%	25%	13%
Fri 14 May 0911 – 48min	192	**Science** – class group. Clear & precise instructions for practical experiments	64%	21%	15%
1314 – 52 min	208	**Literacy** – set, N = 12. Reading, Y5 spelling test, mind maps	46%	22%	32%
1414 – 45 min	180	**PSHE** – class group "Peer group pressure" – discuss, ideas for characters	51%	29%	20%
Thur 20 May 1012 – 52 min	208	**DT** – group. Continue sewing egg cosies, adding features (ST)	59%	20%	21%
1125 – 45 min	180	**Literacy** – set, N = 15 (ST) Story of boy in Bosnia; mind map – feelings?	58%	23%	19%
1414 – 53 min	212	**Music** – class group. Composition, use instruments to accompany song	25%	36%	39%
Wed 26 May 0909 – 20 min	80	**Assembly** – Y5, area outside Y5 classrooms. Notices; merits awarded.	74%	14%	12%
0936 – 24 min	96	**Literacy** – set, N = 15. Recap Haiku, spellings – look, cover, write, check.	49%	26%	25%
1125 – 50 min	200	**Literacy/ICT** – set, N = 15. Work on haiku 'Ice-cream' - on PCs in IT room	65%	20%	15%

Fixed Interval Sampling (Freddy – follow up phase) (Page 2 of 2)

Date, time, duration	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inattention	Hyperactivity / Impulsivity
Thu 10 Jun 0917 – 45 min	180	**Numeracy** – recap multiplication tables; add, subtract pairs of 2-digit numbers	84%	11%	5%
1012 – 45 min	180	**DT** – group, N = 19. Introduction to 'Mechanisms', design front page for file	66%	27%	7%
1127 – 51 min	204	**Literacy** - set 5/5, N = 13. Reading; recap work on 'adverts', write out best copy	69%	19%	12%
1416 – 50 min	200	**Music** – class in music room. Prepare music for 'Activities' week	33%	40%	27%
Mon 14 Jun 0906 – 30 min	120	**Assembly** – Y5 & Y6 in hall - notices including Balloon race; story, prayer (HT)	51%	18%	31%
0943 – 18 min	72	**Literacy** – set 5/5, N = 14. Reading; oral recap of work from last week	62%	24%	14%
1007 – 39 min	156	**Numeracy** – multiplication tables; written methods of column addition (carrying)	78%	19%	3%
1124 – 47 min	188	**PE** (Outdoor Games) – on field, practise cricket skills; play non-stop cricket games	92%	5%	3%
1310 – 56 min	224	**History** – Food from Aztecs. Draw, label food items T brought in to show, discuss	72%	17%	11%
Arts week Wed 23 Jun 0909 – 50 min	200	**Creative activities** – group of 20 work in Art room with T & artist in residence. All read 'Magic Box' discuss, write ideas	71%	20%	9%
0959 – 62 min	248	As above. T reads out her ideas, for what to include in 'Magic Box'. All plan design	72%	21%	7%
1152 - 20 min	80	As above. Start to make clay model of Magic Box with contents. TA in room.	93%	7%	0
1415 –35 min	140	As above. Carry on with clay modelling.	62%	23%	15%
(TOTAL 167 mins)		**(Analysis of all four of the above observation periods together)**	**72%**	**19%**	**9%**
Tues 29 Jun 1314 – 50 min	200	**Literacy** – set 5/5 (2 Ts take ½ lesson each) T-reads story. Comprehension, sentences	71%	22%	7%
1412 –51 min	204	**Science** – ST. 'Life cycle of frog' copy picture and text, fill in missing words	57%	25%	18%

Appendix 12.3

Instantaneous Time Sampling Summary (Freddy – main phase) (Page 1 of 2)

(Observations of Target and Comparison behaviours recorded at 30-second intervals for a 10-minute period, or as stated)

Date, time recording period began	Lesson	Recordings out of 20			Recordings out of 20		
		Target			Comparison		
		0	Inattn	Hy/Im	0	Inattn	Hy/Im
Wed 7 May	**Topic – Science/Geog - habitats**						
1329	**Start** – at tables, recap, copy work	17	3	0	19	1	0
1345	**Middle –** compose/write sentences	12	4	4	19	1	0
1403	**End –** discuss ideas, write individual	14	5	1	19	1	0
	Topic (2) in environmental area						
1439	Sit on grass, photo taken of wind chimes, then look for 3 living things	7	9	4	16	4	0
Th 15 May	**RE (worksheet)/Art (clay model)**						
1322	**Start –** T intro to both tasks	9	6	5	15	5	0
1335	**Middle – {**F – RE, C - modelling	12	5	3	20	0	0
1351	**Middle – {**as above	14	3	3	18	2	0
1401	**End –** F – modelling, C - RE	20	0	0	19	1	0
We 21 May	**Art** – continue 'jungle theatres'						
1406	**Start** – working in pairs (part of communications week)	4	10	6	18	2	0
Thur 5 Jun	**Dance** Y4 in hall, T, TA x 2						
1333 – 20 min	Practice line dance, Spanish dance for dance festival	21/40	8/40	11/40	36/40	4/40	0
	RE – 'The ascension'						
1343	**Start –** T reads story, class at desks	8	7	5	15	4	1
1355	**Middle –** worksheets, pic in books	15	5	0	18	2	0
Mon 9 June	**Assembly –** whole school in hall						
0907	**Start –** HT intro, birthdays, awards	19	1	0	20	0	0
0917	**End –** Rev 'Pentecost', hymn, prayer	8	8	4	18	2	0
	ICT – 17 children in ICT suite						
1335	**Start –** load programme	13	5	2	16	4	0
1345	**End –** as above, then choose game	17	1	2	20	0	0
	PE – class in hall, T,TA, SA						
1407 – 5 min	**Start –** T sorting into groups (Freddy was sent out of lesson)	1/10	6/10	3/10	9/10	1/10	0
Fri 20 Jun	**Dance** – school hall (N= 25, Y3/4)						
1051	**Start** – practice Spanish dance	15	4	1	20	0	0
1101	**End** - practice line dance	7	7	6	20	0	0

Instantaneous Time Sampling Summary (Freddy – main phase) (Page 2 of 2)

Date, time recording period began	Lesson	Recordings out of 20			Recordings out of 20		
		Target			Comparison		
		0	Inattn	Hy/Im	0	Inattn	Hy/Im
Tue 24 Jun	**Numeracy** – Y4 class group						
0922	**Start** {Maths work to be sent	14	4	2	20	0	0
0936	**Middle** {to Middle schools for	10	7	3	18	2	0
1004	**End** {September	4	5	11	17	3	0
	History – 'Moving Home'						
1325	**Start** – class oral session	14	4	2	20	0	0
1342	**Middle –** draw, write about homes	8	10	2	18	2	0
1357	**End** – 'Invasion & Settlement' sheet	13	6	1	19	1	0
Thur 3 July	**RE** – Y4 class group (ST)						
1319	**Start –** Hinduism, recap prev. work	11	9	0	19	1	0
1329	**Middle –** 'Living & Belonging' talk	4	7	9	16	4	0
1400	**End –** writing in RE books	12	7	1	19	1	0
	RE/History – Y4 class group (ST)						
1419	**Start –** finish RE work	15	2	3	20	0	0
1429	**Middle –** {carry on colouring in &	17	2	1	19	1	0
1443	**End –** {cutting out Roman soldier	14	2	4	20	0	0
Wed 9 July	**Hymn Practice** – whole school						
0907	**Start –** {in hall, practise summer	10	5	5	20	0	0
0917	**End** – {songs, leavers song	9	6	5	20	0	0
Thu 10 Jul	**Art** (RE link)						
1400	**Start** – make 'bracelet' in pairs	15	3	2	19	1	0
1416	**Middle –** three more activities:	10	6	4	17	3	0
1433	**End** Sacred Thread, mendhi,wedding	14	5	1	15	5	0
Tue 15 July	**History –** Boudicca, The Romans						
1343	**Start –** writing 'points of view'	13	3	4	18	2	0
1353	**Middle –** colour in mosaic, listen	15	3	2	20	0	0
1403	**End** to story: Commius the Thief	16	1	3	20	0	0
	Practice Leavers' assembly - hall						
1423	{First run-through of Y4 service to	7	5	8	20	0	0
1433	{be held in local church next week	5	7	8	18	2	0
1443	{in front of parents.	12	4	4	19	1	0
Fri 18 July	**Practice Leavers' assembly** - hall						
1424	{	7	6	7	17	3	0
1435	{Another practice – all Y4s	8	5	7	18	2	0
1446	{	14	4	2	20	0	0

F: Freddy C: Comparison pupil

Appendix 12.4

Instantaneous Time Sampling Summary (Freddy – follow up phase) (Page 1 of 2)

(Observations of Target and Comparison behaviours recorded at 30-second intervals for a 10-minute period, or as stated)

Date, time recording period began	Lesson	Recordings out of 20			Recordings out of 20		
		Target			Comparison		
		0	Inattn	Hy/Im	0	Inattn	Hy/Im
Wed 5 May	**Assembly** – Y5 and Y6 in hall						
0907	**Start** – short assembly, prayer	15	3	2	18	2	0
0917	**End** – watch Y8 perform dance	19	1	0	20	0	0
	Science – 'Sound'class group(ST)						
1006	**Start** –T intro activity	10	7	3	16	3	1
1026	**Middle** {design page depicting	4	2	14	19	1	0
1036	**End{**science content- draw, colour	16	1	3	17	2	1
Fri 14 May	**Art** – Design ideas - collage (CT)						
1005	**Start** – T introduces activity	11	7	2	19	1	0
1015	**Middle** – T shows materials (Class sit at tables – T intro)	15	1	4	17	2	1
	Numeracy – set 4/5 (CT)						
1123	**Start** – test	16	2	2	20	0	0
1153	**Middle** – go over answers	11	1	8	18	2	0
1203	**End** – more answers, play game	12	3	5	18	1	1
Thu 20 May	**Numeracy** – (CT) Fractions						
0915	**Start** – 9X table, Fractions	14	4	2	18	2	0
0925	**Middle** – oral fractions, activity	15	5	0	20	0	0
0940	**End** – T demo, activity (cut out hexagons, use in improper fractions)	12	4	4	19	1	0
We 26 May	**Science**– 'Sound' class group(CT)						
1008	**Start**– intro, listen to pieces music	12	6	2	19	1	0
1023	**Middle** – listen to, describe music	12	4	4	15	5	0
	Numeracy–CT, ordering numbers						
1316	**Start** (See notes, F outside room)						
1329	**Middle** – oral; appropriate vocab.	11	6	3	19	1	0
1339	**Middle** – intro; ordering task	16	2	2	20	0	0
1349	**End** – continue ordering task	17	3	0	18	2	0
	RE – Lord's Prayer, meaning (ST)						
1416	**Start** – read; meaning of words?	8	8	4	14	6	0
1429	**Middle** – {cut & stick, annotate &	4	6	10	13	7	0
1453	**End** – {decorate copy of prayer	1	6	13	15	5	0

Instantaneous Time Sampling Summary (Freddy – follow up phase) (Page 2 of 2)

Date, time recording period began	Lesson	Recordings out of 20			Recordings out of 20		
		Target			Comparison		
		0	Inattn	Hy/Im	0	Inattn	Hy/Im
	(Comparison pupil absent for 2 weeks)						
Wed 23 Jun	**(Arts Week)** (NB. Usual comparison absent, used another boy for this extended observation period)						
	Creative activities						
1315	Throughout this period the group	17	2	1	20	0	0
1325	were carrying on making and	12	7	1	19	1	0
1335	painting individual 'Magic Box'	13	6	1	18	2	0
1348	clay models, begun earlier in the	8	3	9	19	1	0
1400	day. (N=20. Working with T, Artist-in-residence, TA)	13	3	4	18	2	0
Tues 29 Jun	**Numeracy** - (ST) Calculators						
0908	**Start } ‘**Work in pairs - sums,	11	7	2	16	4	0
0923	**Middle }** add, subtract money,	6	11	3	14	6	0
0937	**End } ‘**check answers with calc	13	3	4	16	4	0
	Visit from Firemen						
1008	**Start } ‘**Smoke Alarms' talk	20	0	0	20	0	0
1018	**Middle } ‘**from Fireman 1	18	2	0	18	2	0
1029	**Middle } ‘**House fire escape plan'	17	2	1	19	1	0
1040	**End } ‘** talk, Fireman 2	14	5	1	17	3	0

CT: Class teacher ST: Supply teacher F: Freddy

Appendix 13.1

Fixed Interval Sampling (Adam - main phase) (Page 1 of 2)

(Recordings of Target pupil's predominant behaviour for 15-second intervals over a fixed time period)

Date, time, duration	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inattention	Hyperactivity /Impulsivity
Fri 16 May 0938 – 50 min	200	**Numeracy** – group, Mental maths; tallies, bar chart graph	77%	20%	3%
1100 – 63 min	252	**Literacy –** group, 'Questions' – video, discuss, worksheet	78%	19%	3%
Mon 19 May 0907 – 25 min	100	**Assembly** – Whole school, HT Story, Hymn, prayer, medals awarded	35%	39%	26%
0938 – 52 min	208	**Numeracy** – group, Tables test, mental maths, graphs	79%	19%	2%
1100 – 60 min	240	**Literacy** – group, Spelling test, oral PAT, write Qs & sentences	68%	22%	10%
Wed 4 June 0912 – 25 min	100	**KS2 Assembly**, N = approx 240, T Summer song, story, prayer, awards	57%	23%	20%
1104 – 60 min	240	**Numeracy –** group, Individual targets, mental maths, estimation	75%	20%	5%
1435 – 43 min	172	**Literacy** – group, STA + parent helper Reading, adjectives, 'find a fish' game	85%	11%	4%
Thu 12 June 0951 – 39 min	156	**Numeracy** – group, STA, parent helper Practice targets, money problems	80%	14%	6%
1102 – 53 min	212	**Literacy** – group, Physical exercises, handwriting, dictation	81%	12%	7%
Tues 17 Jun 0907 – 14 min	56	**KS 2 Assembly** (not including Y6) Practice summer song, story, prayer	50%	45%	5%
0927 – 65 min	260	**Numeracy –** group, Targets, mental maths, 'Time'	75%	23%	2%
1054 – 65 min	260	**Literacy** – group, Reading, discuss, PAT oral & written work	86%	11%	3%
1257 – 63 min	252	**Literacy/Drama** – group, Read through 'The Remote Control Kid'	79%	16%	5%
Wed 25 Jun 0908 – 22 min	88	**KS2 Assembly** DHT, in hall Hymn, story, prayer, announcements	20%	63%	17%
0937 – 53 min	212	**ICT** – class in ICT room, Finish letter, look at e-mails, "choose"	41%	47%	12%
1057 – 62 min	248	**Numeracy** – group, Targets, Mental maths, symmetry	71%	21%	8%
1310 – 40 min	160	**Outdoor Games** – class, other Y3 T Warm up, bat & ball skills, cool down	65%	34%	1%
1436 – 40 min	160	**Literacy** – group, STA, parent helper 'Play' rehearsal, 'Find the Fish' game	71%	23%	6%

Fixed Interval Sampling (Adam – main phase) (Page 2 of 2)

Date, time, duration	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inattention	Hyperactivity /Impulsivity
Tues 1 July 0945 – 48 min	192	**Numeracy** – group, Targets, Mental maths, revise 'directions'	66%	23%	11%
1103 – 54 min	216	**Literacy** – group, Spellings, PAT programme, practice play	57%	19%	24%
1318 – 35 min	140	**Dance practice** – class in hall, rehearse for theatre performance	33%	37%	30%
Mon 7 July 0943 – 47 min	188	**Numeracy** – group, Mental maths, number game, 'time'	68%	26%	6%
1107 – 50 min	200	**Literacy** – group, Spelling test, oral PAT programme, 'play'	57%	28%	15%
1306 – 55 min	220	**History** – class 'Roman Houses' – oral, worksheets	28%	43%	29%
Wed 16 July 1108 – 48 min	192	**Numeracy** – group, Number grids; mental maths, games	55%	29%	16%
Eco- day 1317 – 40 min	160	**DT –** class group. As part of eco-day, competition to design playground game	56%	21%	23%
Thu 17 July 0909 – 28 min	112	**KS2 Assembly** – DHT, in hall Hymn, story (eco theme), prayer, notices	44%	30%	26%
0944 – 46 min	184	**Numeracy –** group, Number grid, mental maths, games	57%	32%	11%
1428 – 35 min	140	**RE –** class teacher, instead of RE teacher 'Plagues of Egypt' – story, worksheet	65%	24%	11%

Appendix 13.2

Fixed Interval Sampling (Adam – follow up phase)

(Recording of Target pupil's predominant behaviour for 15-second intervals over a fixed time period)

Date, time, duration	Number of 15-second observation recordings	Context	No ADHD	ADHD behaviours	
				Inattention	Hyperactivity/ Impulsivity
Wed 12 Nov 1306 – 41 min	164	**Outdoor Games –** class practice football skills on school field	80%	18%	2%
Tues 18 Nov 0946 – 45 min	180	**Numeracy** – group – mental maths, oral problem solving, Tables tape, dominos	63%	30%	7%
1055 – 65 min	260	**Literacy** – group – reading; listen to comprehension tape; punctuation activity	64%	29%	7%
Thur 27 Nov 0908 – 28 min	112	**KS2 Assembly** – school hall. Practice Christmas songs	64%	30%	6%
0941 – 49 min	196	**Numeracy** – group – count on in 10s; fractions – oral, worksheet, practical	67%	27%	6%
1058 – 62 min	248	**Literacy** – group – reading; exercises; hand- writing; oral Q&A; sentences	62%	33%	5%
Tues 2 Dec 0940 – 50 min	200	**Numeracy** – group- mental maths; tally charts – practical, written activity	77%	19%	4%
1059 – 63 min	252	**Literacy** – group reading; comp-rehension; listening task; written; game	77%	21%	2%
Wed 10 Dec 0942 – 50 min	200	**Numeracy** – group – mental maths; bingo game using 2x table; test; charts	84%	14%	2%
1053 – 63 min	252	**Literacy** – group – missing words; reading; spellings; adjectives	89%	9%	2%

Appendix 13.3

Instantaneous Time Sampling Summary (Adam – main phase) (Page 1 of 2)

(Observations of Target and Comparison behaviours recorded at 30-second intervals for a 10-minute period, or as stated)

Date, time recording period began	Lesson	Recordings out of 20			Recordings out of 20		
		Target			Comparison		
		0	Inattn	Hy/Im	0	Inattn	Hy/Im
Tues 6 May	**PE** – class in school hall						
1308	**Start** – warm up, skipping ropes	15	3	2	20	0	0
1322	**Middle** – small ball skills	15	4	1	20	0	0
1340	**End** – bat & ball skills	13	6	1	19	1	0
	History – The Romans (at tables)						
1431	**Start** – recap, intro to timeline	10	6	4	18	1	1
1441	**Middle –** more intro to worksheets	10	5	5	19	0	1
1451	**End** – timeline activity	19	0	1	20	0	0
Thu 8 May	**Art** – class at tables, Seed Collage						
1307	**Start –** T intro – design picture	12	5	3	18	2	0
1321	**Middle** – collage, stick on seeds	16	4	0	19	1	0
1336	**End** – as above	12	5	3	19	1	0
	RE – class with different teacher						
1437	**Start** – feelings of forgiveness	13	4	3	19	0	1
1447	**Middle** – as above, story of Joseph	12	6	2	17	2	1
1457	**End** – Story end, discuss feelings	10	4	6	18	0	2
Fri 16 May	**Assembly –** whole school						
0908	**Start }**HT awards merit and	11	5	4	18	2	0
0918	**End }** courtesy badges, etc	8	2	10	18	0	2
	History – Roman invasion (ST)						
1257	**Start** – T goes through story	8	6	6	18	2	0
1235	**Middle –** worksheets	5	9	6	15	4	1
1340	**End –** finish worksheets, T recap	2	8	10	13	4	3
	Art – class group (History link)						
1433	**Middle** – {colour in pic of Roman	14	2	4	19	1	0
1443	**End – {**soldier for display later	10	4	6	18	2	0
	Literacy – class group, end of day						
1500	T reads start of story	8	9	3	18	0	2
Mo 19 May	**Science** – growing conditions (T2)						
1302	**Start –** at tables, discuss orally	11	1	8	19	0	1
1325	**Middle –** write sentences on sheet	10	8	2	17	3	0
1343	**End –** write predictions on sheet	7	8	5	18	2	0
Wed 4 June	**ICT –** T, in ICT room, after intro						
1002	**Start {**letter from Roman	15	4	1	19	1	0
1012	**Middle {**soldier to mother **–** copy	11	2	7	16	4	0
1022	**End {**from handwritten draft	8	7	5	16	4	0

Instantaneous Time Sampling Summary (Adam – main phase)(Page 2 of 2)

Date, time recording period began	Lesson	Recordings out of 20			Recordings out of 20		
		Target			Comparison		
		0	Inattn	Hy/Im	0	Inattn	Hy/Im
Wed 4 Jun	**Outdoor Games** – T, school field						
1315	**Start** – warm up, jog round field	14	6	0	19	1	0
1325	**Middle –** several team races	8	10	2	17	3	0
1335	**End** – relay races	6	11	3	17	3	0
Thu 12 Jun	**Y6 performance** – KS2, in hall						
0920	**Start** – guitars, poetry, sketch	15	3	2	19	1	0
0930	**Towards end –** song & dance	17	2	1	19	1	0
	Art – class (science, history links)						
1300	**Start –** collage, paint plate, soldier	11	7	2	18	1	1
	RE – class, (T3)						
1429	**Start** – recap Moses story	10	9	1	19	1	0
1439	**Middle –** continuation of story	5	7	8	15	3	2
1449	**End –** worksheets completed	9	6	5	19	1	0
Tues 1 July	**KS2 Assembly –** in hall						
0907	Start – Hymn, story	11	5	4	19	0	
0917	Middle – Story (continued)	12	1	7	15	2	1
0927	End – 'notices', prayers	5	8	7	11	4	3 5
	Science – 'parts of plants we eat'						
1428	**Start** – worksheet	10	9	1	19	1	0
Mon 7 July	**Assembly** – whole school in hall						
0910	**Start –** hymn, story beginning	6	9	5	14	5	1
0920	**End –** story end, prayer, notices	7	9	4	14	3	3
	Dance practice – class in hall						
1440	**Start –** practice theatre performance (Adam asked to sit on side& take no further part)	1	5	14	16	4	0
We 16 July	**Assembly** – KS2 in school hall						
0913	**Start** {Visitor speaks about	4	8	8	19	1	0
0923	**End** {recycling on 'Eco-day'	8	2	10	15	3	2
Th 17 July	**History/Art –** The Romans						
1300	**Start –** T introduces worksheet	8	6	6	19	0	1
1316	**Middle –** paint mosaic photo frame	15	4	1	19	1	0
1341	**End –** 'Roman Baths' worksheet	14	4	2	15	5	0

Appendix 13.4

Instantaneous Time Sampling Summary (Adam – follow up phase)

(Observations of Target and Comparison behaviours recorded at 30-second intervals for a 10-minute period, or as stated)

Date, time recording period began	Lesson	Recordings out of 20			Recordings out of 20		
		Target			Comparison		
		0	Inattn	Hy/Im	0	Inattn	Hy/Im
Wed 12 Nov	**History** – Anglo-Saxons						
1425	**Start –** recap in classroom	8	8	4	17	3	0
1441	**Middle –** archaeology dig outside	16	4	0	18	2	0
1500	**End –** finish dig, then classroom	8	9	3	14	5	1
Tue 18 Nov	**KS2 Hymn Practice** – in hall						
0912	**Start**	7	9	4	16	4	0
0922	**Middle**	13	6	1	16	4	0
0932	**End**	11	5	4	19	0	1
Tue 2 Dec	**RE –** 'The Shepherds' (T4)						
1304	**Start –** T recaps story, role play	1	12	7	18	1	1
1320	**Middle –** as above	6	10	4	18	1	1
1332	**Middle –** watch video, discuss	11	8	1	20	0	0
1346	**End** – recap, prepare for writing	9	10	1	15	5	0
Wed 10 Dec	**KS2 Assembly**, DHT in hall						
0910	**Start**	6	12	2	20	0	0
0920	**End**	11	7	2	16	4	0

Appendix 14.1

Case study schools (Part 2) – incidence rates of ADHD

School	Number of pupils on roll	Number of pupils with ADHD diagnosis			Percentage with ADHD diagnosis
		Boys	Girls	Total	
1	420	0	0	0	0.0
2	440	7	1	8	1.8
3	207	3	0	3	1.4
4	130	2	0	2	1.5
5	140	0	0	0	0.0
6	400	0	0	0	0.0
7	540	3	0	3	0.6
8	500	0	1	1	0.2
Totals - eight schools	2777	15	2	17	0.6

The boy:girl ratio in the eight schools included in **Part 2** case studies was 7.5:1.

Cross-case analysis of Fixed Interval Sampling (FIS) recordings for 'No ADHD' behaviour for target pupils: N (number of recordings) and percentages (Details taken from individual case studies)

Main (M) or follow up (F) phase		Case 1		Case 2		Case 3		Case 4		Case 5		Case 6	
		M	F	M	F	M	F	M	F	M	F	M	F
All settings	N	2993	3427	2928	4316	1777	1366	1875	2305	3013	3752	3572	1511
	%	71	66	61	71	81	73	61	55	63	64	65	73
Literacy class	N					270		583	894				
	%	#	#	#	#	71	#	67	61	#	#	#	#
Literacy group	N	1345	1047	1157	1537	LSB 311	317	130	ALS 90	NG 1263	943	1452	741
	%	79	69	70	75	83	82	72	75	64	64	74	73
Numeracy class	N					559		290	196				
	%	#	#	#	#	84	#	40	36	#	#	#	#
Numeracy group	N	948	1420	1176	1471		413			610	556	1456	568
	%	64	73	58	68	#	57	#	#	57	72	70	73
Science	N		Set 392	240	320			42			353		
	%	*	63	60	78	*	*	39	*	*	63	*	*
Art/DT	N			55	124	104	178	158	198	NG 287	844	90	
	%	*	*	76	88	74	86	72	50	74	67	56	*
Geography	N		54						72		127		
	%	*	39	*	*	*	*	*	26	*	68	*	*
History	N	350				92			50	193	162	61	
	%	81	*	*	*	66	*	*	83	60	72	28	*
ICT	N		226		123	LSB 78	134	111	255	74	130	87	
	%	*	81	*	75	98	74	69	72	92	65	41	*
Music	N		98	65	54		171	65	0	NG 74	119		
	%	*	36	81	59	*	82	86	0	71	29	*	*
PE	N			78	152		94	248	337	84	174	148	131
	%	*	*	43	66	*	87	73	62	70	93	49	80
RE	N			101	130			90		37	132	91	
	%	*	*	47	62	*	*	64	*	37	63	65	*
School hall	N	350	190	56	259	53	59	158	213	41	61	187	71
	%	58	43	33	66	83	87	57	66	68	51	41	63
PSHE	N				146					NG 262	92		
	%	*	*	*	73	*	*	*	*	63	51	*	*
Other	N					Social Skills NG 319				Golden Time NG 88	Y5 assembly 59		
	%					89				88	74		

LSB learning support base
NG nurture group
ALS additional literacy support
DT design and technology
ICT information and communication technology
PE physical education
RE religious education
PSHE personal, social and health education
Set science was delivered in ability sets in school 1, follow up phase
apart from case 3 in main phase and case 4 in both phases, literacy and numeracy lessons were usually delivered in ability groups
** timetabling precluded access to this curriculum area

Appendix 14.3

Cross-case analysis of Instantaneous Time Sampling (ITS) recordings for 'No ADHD' behaviour: N (number of recordings) and percentages – target pupils (T) and comparison pupils (C) (Details taken from individual case studies)

Main or follow up phase		Case 1				Case 2				Case 3				Case 4				Case 5				Case 6			
		Main		Follow up		Main		Follow up		Main		Follow up		Main		Follow up		Main		Follow up		Main		Follow up	
		T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C
All settings	N	357	594	352	507	390	577	461	729	767	950	139	204	497	941	507	860	523	832	413	586	481	825	107	207
	%	51	85	57	82	54	80	54	85	67	83	58	85	46	87	52	88	58	92	63	89	51	88	45	86
Literacy	N	50	92			07	32	35	68	226	302			181	356	219	316					08	18		
	%	42	77	#	#	17	80	44	85	63	84	#	#	43	85	61	88	#	#	#	#	40	90	#	#
Numeracy	N					12	16			284	345			124	262	88	194	28	55	154	216				
	%	#	#	#	#	60	80	#	#	68	82	#	#	41	87	40	88	46	92	64	90	#	#	#	#
Science	N	47	78			17	45	109	154	28	41	29	53	30	68			43	57	54	86	38	73		
	%	47	78	*	*	28	75	61	86	46	68	48	88	37	85	*	*	72	95	54	86	48	91	*	*
Art/DT	N	71	136	87	104	175	205	84	128	108	114	40	55	29	50	31	58	77	106	89	130	75	111		
	%	44	85	62	74	73	85	60	91	77	81	67	92	48	83	52	97	64	88	63	93	63	93	*	*
Geog	N																	07	16						
	%	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	35	80	*	*	*	*	*	*
History	N	75	108	79	113	90	124	85	126	36	40							125	174			91	156	32	49
	%	63	90	66	94	56	78	53	79	90	100	*	*	*	*	*	*	69	97	*	*	51	87	53	82
ICT	N			20	35			47	91							35	37	30	36			34	51		
	%	*	*	50	87	*	*	47	91	*	*	*	*	*	*	88	93	75	90	*	*	56	85	*	*
Music	N	35	57	39	50	21	33	34	54			40	50			21	47								
	%	58	95	65	84	53	83	56	90	*	*	67	83	*	*	35	78	*	*	*	*	*	*	*	*
PE	N					28	33	14	28					29	56	14	38	43	76			72	128		
	%	*	*	*	*	70	83	35	70	*	*	*	*	48	93	35	95	54	95	*	*	51	91	*	*
RE	N	05	17	29	44							30	46	40	55	48	68	71	122	13	42	59	107	27	71
	%	25	85	48	73	*	*	*	*	*	*	50	77	67	91	60	85	51	87	22	70	49	89	34	89
School hall	N	50	67	98	161	40	89	22	45	49	72			64	94	51	102	46	78	34	38	72	143	48	87
	%	63	84	49	80	33	74	37	75	61	90	*	*	64	94	43	85	57	98	85	95	40	79	48	87
PSHE	N	24	39							36	36														
	%	60	98							90	90														
Other	N							**	**											$	$	†	†		
	%							31	35											69	74	32	38		
								78	88											86	93	80	95		

** timetabling precluded access to this curriculum area

Where literacy and numeracy lessons are taught in groups, ITS was not possible as comparison pupils were in different groups

** class completed individual questionnaires for Ofsted inspectors $ visit from firemen † KS2 watch Y6 performance

Appendix 14.4

Instantaneous Time Sampling (ITS)

Details of recordings for '*No ADHD'* behaviours are included in Table **14r** in Chapter **14**. The following information refers to *ADHD behaviours* recorded for the six target pupils in the main phase and follow up phase across all settings using ITS observation techniques.

14.4a. Analysis of ITS recordings for 'inattention' behaviour across all settings over time: N (number of recordings) and percentages

		Main phase			Follow up phase		
		Target	**Comparison**	**Difference**	**Target**	**Comparison**	**Difference**
Case 1	N	139	72	67	153	100	53
	%	20	10	10	25	16	09
Case 2	N	183	106	77	253	110	143
	%	25	15	10	29	13	16
Case 3	N	195	143	52	90	36	54
	%	17	13	04	38	15	23
Case 4	N	359	131	228	301	113	188
	%	33	12	21	31	11	20
Case 5	N	219	67	152	133	70	63
	%	24	08	16	20	10	10
Case 6	N	258	81	177	100	29	71
	%	28	09	19	42	12	30
All 6 cases	N	1353	600	753	1030	458	572
	%	25	11	14	29	13	16

14.4b. Analysis of ITS recordings for 'hyperactive-impulsive' behaviour across all settings over time: N (number of recordings) and percentages

		Main phase			Follow up phase		
		Target	**Comparison**	**Difference**	**Target**	**Comparison**	**Difference**
Case 1	N	204	34	170	115	13	102
	%	29	05	24	18	02	16
Case 2	N	147	37	110	146	21	125
	%	21	05	16	17	02	15
Case 3	N	178	47	131	11	00	11
	%	16	04	12	04	00	04
Case 4	N	224	08	216	172	07	165
	%	21	01	20	17	01	16
Case 5	N	158	01	157	114	04	110
	%	18	00	18	17	01	16
Case 6	N	201	34	167	33	04	29
	%	21	03	18	13	02	11
All 6 cases	N	1112	161	951	591	49	542
	%	20	03	17	16	01	15

Appendix 15.1

Summary of hypotheses

In the present research a hypothesis is defined as 'a supposition that can be tested'. From the educational perspective directing this research, the following summarises hypotheses that have been generated from **Parts 1** and **2**.

Summary of number of hypotheses generated in Parts 1 and 2

	Part 1	Part 2	Total
Incidence and gender ratio of ADHD	**3**	**0**	**3**
Multi-professional identification, assessment and management of ADHD	**4**	**3**	**7**
School training needs	**1**	**0**	**1**
Variability of ADHD symptoms across curricular contexts and time	**0**	**9**	**9**
Comorbid/associated difficulties	**1**	**5**	**6**
Total number of hypotheses generated	**9**	**17**	**26**

Incidence of ADHD

- Local incidence rates of ADHD are 0.5% –1% of total school populations, dependent on methods of identification.
- Incidence of ADHD appears to be highest in pupils at KS1 and KS2.
- Using the same identification procedures, more boys than girls are diagnosed with ADHD.

Multi-professional identification, assessment and management of ADHD

- Most pupils who receive a diagnosis of ADHD appear to do so between the ages of 5 – 9 years.
- The majority of pupils diagnosed with ADHD may be prescribed medication as part of their treatment.
- Positive changes may be produced with medication in most cases.
- The integration of children's services may lead to improvements in liaison between health and education services.
- Differences in attitudes and awareness of schools and parents to the concept of ADHD may contribute to variability in identification and assessment procedures.

- Variability in multi-professional co-operation and access to child and adolescent mental health services may lead to differences between schools in the numbers of pupils with a diagnosis of ADHD.
- The majority of pupils who display ADHD characteristics appear to have their needs met without a Statutory Assessment and Statement of SEN.

School training needs

- Teachers would welcome training in the identification and management of ADHD.

Variability in ADHD symptoms

- In school settings, situational and longitudinal variability in ADHD behaviours appears to occur both within cases and across cases. There may be differing possible explanations for this variability.
- Pupils with ADHD appear to display more of the 'inattention' behaviours than the 'hyperactive-impulsive' behaviours in school contexts.
- The use of concrete and kinaesthetic teaching and learning styles, rather than reflective, abstract styles may lead to higher attainment in pupils with ADHD.
- Lessons involving computer-based tasks and novel approaches may produce fewer ADHD behaviours.
- Small ability groups may lead to higher attainment by pupils with ADHD in literacy lessons, but not necessarily in other curricular areas.
- Situations where one-to-one support is provided and where a good relationship has been built up with a teacher or teaching assistant may produce lower levels of ADHD behaviour.
- Pupils with ADHD may display more disruptive behaviour in unstructured whole class lessons.
- The use of a range of classroom management strategies may help improve the on-task behaviour of pupils with ADHD.
- Differences between overall recorded behaviours for pupils with ADHD and non-ADHD comparison pupils appear to be stable over time.

Comorbid and associated difficulties

- Pupils diagnosed with ADHD may experience a range of comorbid or associated difficulties.
- Pupils with ADHD appear to experience a range of associated cognitive and affective difficulties which may affect their learning and behaviour in school.
- Levels of self-esteem may vary between pupils with ADHD. They do not all appear to suffer from poor self-esteem.
- There appears to be a high degree of emotional immaturity amongst pupils with ADHD.
- Pupils displaying ADHD-related behaviours appear to be ignored or rejected by their peers.
- Pupils with ADHD may benefit from more emphasis on an affective curriculum in schools, especially the teaching of social skills.