

**Psychological and behavioural disorders among
young people in pupil referral units**

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Abstract

Attention Deficit Hyperactivity Disorder (ADHD) symptoms contribute to impairment and negative outcomes that are evident from a young age in education. Those with ADHD often fall behind their peers and exhibit challenging behaviours, and a number of strategies may be put in place to try and support them. However, many experience repeated exclusions that lead them into alternative education provision and little is known about whether support provided to them at school is tailored to their needs. Fifty-two young people aged 11 to 16 from pupil referral units and a special educational needs school completed screens for ADHD, Conduct Disorder (CD), Oppositional Defiant Disorder (ODD), Learning Disability (LD), psychiatric distress and traumatic brain injury. Informant-ratings were collected for externalising disorders and school records reviewed to identify behavioural incidents and explore the support received in previous and current education settings. Results indicated high rates of symptoms with 44% screening positive for ADHD and almost one-third for CD. A screening prevalence of 18% was found for LD and just under one-third reported a history of head injury. Those with ADHD were significantly more impaired and responsible for significantly more behavioural incidents than those without. Despite this, there was only one historical diagnosis of ADHD. Those with ADHD were more likely to have received a non-therapeutic one-to-one intervention in their mainstream school but were no more likely than those without ADHD to receive any of the identified categories of support in their alternative placement. Results indicate a need for mental health professionals to support education providers to expand their awareness of the mental health needs of young people and to

tailor school-based support around those needs. Agencies must work closely to implement feasible and effective screening protocols and develop accessible pathways to facilitate both the identification and treatment of young people.

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1. Introduction

This thesis is an investigation into the psychological and behavioural needs of young people with and without Attention Deficit Hyperactivity Disorder (ADHD) who are accessing alternative education provision in the United Kingdom, and the provisions that are available to them to support them in education. An overview of key literature relevant to this topic will be provided, beginning with an introduction to ADHD as a clinical condition and common co-morbidities. There will be an additional focus on research investigating the difficulties associated with ADHD for young people in education, including decreased scholastic performance, disruptive behaviour, school exclusion, and placement in alternative education provision. The importance of identifying and supporting ADHD within education settings will be considered with discussion of interventions and provisions commonly available for those with such needs. In light of the literature presented the review will conclude with a description of the thesis study.

1.1 Attention Deficit Hyperactivity Disorder

According to the Diagnostic and Statistical Manual of Mental Disorders – Fifth Edition (DSM-V), ADHD is a neuro-developmental condition of childhood onset, characterised by core symptoms of inattention, impulsivity, and hyperactivity (American Psychiatric Association [APA], 2013). Results of a meta-analysis have indicated that ADHD is found in many cultures (Polanczyk, de Lima, Horta, Biederman, & Rohde, 2007). It is more commonly reported in

boys than girls (APA, 2013) and is estimated to affect 3 to 9% of school-age children and young people (Swanson et al., 1998). Differences in prevalence estimates have been partly explained by variations in the diagnostic criteria and the diagnostic methodologies used between studies, however, a recent meta-analysis found that rates of prevalence rates of ADHD were broadly similar (approximately 5-7%) regardless of whether ADHD was defined by parent ratings, teacher ratings, or a best estimate procedure (Willcutt, 2012).

1.1.1 Aetiology

A biopsychosocial approach can be taken to understanding the aetiology of ADHD. There is a strong genetic component, with family, twin, and adoption studies all implicating genes in the development of ADHD (e.g. Steinhausen, 2009; Stergiakouli & Thapar, 2010), and studies at microgenetic level have implicated specific brain systems in the development of ADHD (e.g. Li, Sham, Owen, & He, 2006; Thapar, Cooper, Jefferies, & Stergiakouli, 2012).

Lichtenstein, Carlström, Råstam, Gillberg, and Anckarsäter (2010) estimated, using structural equation modelling and concordance rates, that for the 16,858 twins included in their analyses the mean heritability estimate (i.e. the genetic effect) for ADHD is 79%, with the remaining 21% accounted for by nonshared environmental effects. With this figure in mind, any genetic predisposition for ADHD must be further influenced by other factors. Indeed, the two explanations may overlap, as explained by a diathesis stress model, with a genetic vulnerability interacting with subsequent environmental stress factors to produce symptoms of ADHD. Belsky and Pluess (2009), for example,

review research identifying a range of "vulnerability genes" or "risk alleles" (p885) that may contribute to an individual being more susceptible to various environmental factors such as abuse or socioeconomic status. They also propose that such genetic susceptibility may be open to more positive influences, with risk of difficulties moderated or even reduced by positive environmental factors such as, for example, living in a supportive environment.

A number of further psychosocial contributors have also been indicated by research. For example, it has been reported that social experiences such as attachment deprivation (Roskam et al., 2014) and neglect (e.g. Heneghan et al., 2013) in a child's early years can influence the development of ADHD, as well as a number of environmental factors such as low birth weight, being born prematurely, mothers smoking and consuming alcohol during pregnancy, and poor diet (see Linnet et al., 2003). Psychosocial difficulties are more common among those struggling with severe symptoms of ADHD, with reports that 36% of these children have parents with no educational qualifications compared with 21% of other children, and 52% live in households in which the gross weekly income is less than £300, compared with 34% of other children (Green, McGinnity, Meltzer, Ford, & Goodman, 2004). As with many disorders, it is somewhat difficult to untangle the different causes of ADHD, which come together resulting in a variety of ADHD presentations (Thapar et al., 2012).

1.1.2 Symptoms

Although those with ADHD are a heterogeneous group in terms of the symptom presentation, ADHD is characterised by three core groups of symptoms. Firstly, symptoms of inattention, which include among the diagnostic criteria not listening when spoken to directly, becoming easily distracted, and making careless mistakes in work (APA, 2013). At home, parents may notice inattentive individuals struggling to follow through on instructions and finish tasks, or being forgetful in their daily activities.

Secondly, symptoms of impulsivity, including finding it difficult to take turns, including in conversations when individuals may interrupt others or blurt out answers (APA, 2013). Thirdly, examples of hyperactive symptoms include fidgeting or talking excessively and, in school, hyperactive individuals may fidget in their chair and find it difficult to stay seated when they are expected to (APA, 2013, Barkley & Murphy, 2006).

In order to be considered as an indication of ADHD, symptoms must be present across at least two areas of an individual's life. For children and adolescents, this is typically in the home and at school. Symptoms of ADHD may impact on family relationships and completion of homework, and young people with ADHD may struggle to manage as well as their peers in social situations. In the classroom, individuals are likely to struggle with time management and interactions with peers, and may also have difficulties during unstructured time at school such as break-times or in sports clubs (Barkley & Murphy, 2006). In terms of ADHD presentation, individuals may be diagnosed

with ADHD of Inattentive subtype if they show significant impairment from inattentive symptoms but not from the other two core groups of symptoms; they may be classified as having ADHD of Hyperactive/Impulsive subtype if they primarily experience symptoms from these domains; or they may be diagnosed with ADHD of Combined subtype if they experience sufficient symptoms across categories.

As well as the core symptoms of ADHD, research has suggested an additional facet of the disorder in terms of emotional instability. Studies using a variety of methods including observational studies and parent- and self-ratings have reported that children with ADHD have increased emotional responses and frustration levels (Maedgen & Carlson, 2000; Melnick & Hinshaw, 2000; Walcott & Landau, 2004), as well as greater levels of other emotions such as sadness or guilt (Braaten & Rosen, 2000) compared with their peers.

Individuals, including children with ADHD, have also self-reported that they find it more difficult than those without ADHD to regulate their emotions (Braaten & Rosen, 1997).

For some, ADHD has been considered to be a disorder of childhood only (e.g. Moncrieff & Timimi, 2010). Indeed, it is not uncommon for symptoms of the disorder to remit as the child reaches adolescence (Faraone, Biederman, & Mick, 2006). However, it may be that this reflects a change in the presentation of the condition, rather than true remittance of symptoms. It has been reported that, during adolescence, the overt symptoms of hyperactivity and impulsivity can remit to a greater degree than the more 'hidden' symptoms of inattention

(Faraone et al., 2006). This may appear outwardly as though the young person's ADHD has improved, but persisting (perhaps sub-threshold) symptoms may still be present. Research has suggested that around 50% of children will continue to experience symptoms through adolescence and into adulthood, and it is estimated that, at age 25, around 15% will still meet diagnostic criteria for a full diagnosis (Faraone et al., 2006). This has been supported by the recent inclusion in the DSM-V of detailed criteria for the diagnosis of ADHD in adults, for which a childhood diagnosis of ADHD is a prerequisite, even if retrospectively made (APA, 2013).

1.1.3 Diagnosis

A common approach in research of ADHD is to compare those with a diagnosis and those without, and diagnostic status is typically determined through the use of a screening questionnaire with a cut-off threshold required for a positive diagnosis to be given. There are various forms available for this such as the Conners' Rating Scales – Revised (Conners, 2001) or the Disruptive Behaviour Rating Scales (DBRS; Barkley & Murphy, 2006), which list symptoms and ask respondents to rate how frequently each is observed or experienced. The DBRS is particularly useful as it includes screening items for Conduct Disorder (CD) and Oppositional Defiant Disorder (ODD) as well, and these are the most common co-occurring conditions among those with ADHD (e.g. Harty, Miller, Newcorn, & Halperin, 2009; Young, 2014). Screening questionnaires can usually be administered to the individual, their parent/carer, or their teacher, or (ideally) all three, but it is important to acknowledge that

research procedures using screening questionnaires are not sufficient to make a full clinical diagnosis of ADHD. For this, a screening measure might make up part of the assessment procedure, but a full clinical (often multidisciplinary), psychosocial assessment of the person is required to give a proper diagnosis (National Institute for Health and Clinical Excellence [NICE], 2009). This should include consideration of behaviour and symptoms across the individual's life, information about their developmental and psychiatric background, an assessment of their mental state, and observer- as well as self-report of difficulties (NICE, 2009). This combination of sources means that rich and detailed information can be obtained to inform the diagnosis. However, this can also lead to complications in the diagnostic process. For example, parents and teachers have been found to report different levels of symptoms, with greater levels of variance for parent-report inattentive symptoms but lower levels for hyperactive/impulsive symptoms, compared with teachers (Gomez, Burns, Walsh, & Hafetz, 2005). One possible explanation for such differences is that, as well as observing different behaviours of the young person to teachers, parents may be more biased in their ratings (Hartman, Rhee, Willcutt, & Pennington, 2007). It can therefore be a challenge for clinicians to reconcile differences between the various sources of information in order to avoid false positive or false negative assessments, and informant reports can be combined in different ways in order to achieve this (see Youngstrom, Findling, & Calabrese, 2003).

In order to meet diagnostic criteria, symptoms must be pervasive, that is they should not only be evident at home or school or work, but across more than

one setting (APA, 2013). Furthermore, for a positive diagnosis of ADHD to be given, symptoms related to the core aspects of the disorder must be inappropriate when considered in light of the individual's developmental age, and must contribute to significant impairment in areas of everyday functioning (APA, 2013). Screening measures such as the DBRS include a brief measure of impairment, and the use of a rating scale to assess impairment specifically has been further expanded in the Impairment Rating Scale (Fabiano et al., 2006), which additionally included 'open text' responses for informants to describe the impairments their child experiences.

In summary, ADHD is among the more common disorders reported for children and adolescents. A variety of factors interact to give rise to symptoms of ADHD, including biological, psychosocial, and environmental factors. This leads to different presentations of ADHD around a core group of symptoms that contribute to impairment in a range of settings, with much variance from person to person. Screening measures are available for easy identification of potential ADHD, which can be followed up with full clinical diagnostic assessments if indicated.

1.2 Common co-morbid conditions

Co-morbidity is not unusual for children with ADHD. It has been reported that up to two-thirds of those with ADHD also meet criteria for at least one co-morbid condition (see Green et al., 2004; Young, 2014). Green et al. (2004) also found that over two-thirds of parents of children with hyperkinetic

disorders reported specific physical or developmental problems for their child compared to around half of parents of children without hyperkinetic disorders, and they were also more likely to report poor general health of their child.

1.2.1 Disruptive behaviour disorders

As mentioned previously, the most common co-morbid diagnoses for young people with ADHD are those of CD and ODD (Harty et al., 2009; Young, 2014). In fact, a distinction has been reported between ADHD with or without CD that may have implications for outcomes and treatment (Taylor et al., 2004). The diagnostic criteria for ODD describe a recurring pattern of behaviour that begins before the age of eight and not beyond early adolescence. The behaviour is characterised by defiant, disobedient, and hostile behaviours towards those in positions of authority (APA, 2013) and is different to the presentation of CD, which is defined by an overall disregard for societal rules and norms and the rights of others and has a later onset than ODD, usually after the age of ten (APA, 2013). Behaviours typical in CD include verbal and physical aggression, defiance, antisocial behaviour (including criminal/offending), for example fire-setting or theft, and truanting. The most recent national epidemiological survey in the United Kingdom (UK) found that just over half a million young people in the general population, around 6%, had CD (Green et al., 2004). As with ADHD, it has been reported that those with CD are more likely to have a family background in which parents do not have educational qualifications and with a low income (Green et al., 2004).

Shared background factors may partly explain the high rates of co-morbidity between ADHD and CD, which reportedly occur together at a rate higher than chance (Waschbusch, 2002). Results from a nationally representative sample of 10,438 children and adolescents in the UK indicated that, among young people aged five to 15 years, ADHD, and CD or ODD occur together in around 35% of cases (Maughan, Rowe, Messer, Goodman, & Meltzer, 2004). More recent research from the United States of America (USA) has similarly reported that, together, ODD and CD affect up to half of children and adolescents with ADHD with higher co-morbidity among those with the Combined subtype of ADHD (Elia, Ambrosini, & Berrettini, 2008). Co-morbidity is an important factor to consider when researching ADHD, especially where there are questions around the impact of symptoms. It has been reported that, where ADHD and CD occur together, they comprise clinically and genetically more severe variants of their independent disorders (Thapar, Harrington, & McGuffin, 2001), which may contribute to a 'double deficit' in terms of self-management problems according to Young (2014). With regard to emotional lability, it has been reported that this especially appears to be related to a greater extent with co-morbid ODD symptoms, than to the core symptoms of ADHD (Sobanski et al., 2010).

1.2.2 Mood disorders

Research has indicated that young people with ADHD are also at an increased risk of developing internalising disorders. In the UK, it has been reported that around 3% of children and young people have a recognisable anxiety disorder,

and around 1% are severely depressed (Green et al., 2004). However, a meta-analysis of 21 epidemiological studies reported a three-fold increase in anxiety disorders among those with ADHD compared with those without (Angold et al., 1999). It has been reported that young people with both disorders are also more impaired in terms of their school functioning and are more likely to be accessing mental health services than those with either disorder in isolation (Hammerness et al., 2010). Young (2014) reported that adolescence may be a particular risk factor for developing anxiety, as young people around this age may be pre-occupied with a need to 'fit in' and compare themselves to peers. It may be that the co-morbidity with ADHD is an artifact of assessment or measurement methods, although Angold et al. (1999) concluded from their meta-analysis that this was not the case. Instead, it is likely that young people with ADHD become more aware that they are struggling to manage as well as others due to their symptoms, and the impact of this on self-esteem may contribute to the development of anxiety (Young, 2014). It has also been suggested that shared genetic influences, temperament of the young person, neuropsychological functioning, and family influences, can all contribute to explanations of the high co-morbidity rates (for a review see Jarrett & Ollendick, 2008).

Similar findings have been reported with disorders of low mood, with a large-scale study American study using a representative birth-cohort of young people finding rates of mood disorder of approximately 23% among those with a childhood diagnosis of ADHD (Yoshimasu et al., 2012). With regard to depression in particular, there is over a five-fold increase for those with ADHD

(Angold et al., 1999). As with anxiety, Young (2014) suggested that adolescence is a time when the development of low mood may be especially likely, as young people with ADHD become more aware of the disruption their symptoms have caused and early low-level mood problems may persist and worsen, potentially exacerbating concentration difficulties. Such difficulties are therefore helpful to consider in research as they may contribute to the levels of impairment experienced by young people with ADHD. As with ADHD, screening measures are available to provide a quick indication of potential problems that may warrant further clinical investigation. Disorder specific screens are available, such as the Beck Youth Inventories that include questionnaires for both depression and anxiety (Beck, Beck, Jolly, & Steer, 2005) or broader screens comprising key symptoms might be used in research to provide indications of clinical difficulties. One such measure is the General Health Questionnaire (GHQ; see Goldberg & Williams, 1988), a short measure widely used for this purpose in research (Jackson, 2007). The GHQ indicates a range of clinical difficulties and overall presence of psychiatric distress without adding too much to the response burden for research participants. This is particularly helpful with participants for whom the completion of long questionnaire packs might prove a challenge.

1.2.3 Learning Disability

A UK study of young people with learning disability (LD), reported that those with LD were rated as having significantly more symptoms of hyperactivity than those without, even within the same family, with up to 60% of those with

LD also scoring above the clinical cut-off for hyperactivity on the Strengths and Difficulties Questionnaire (Hastings, Beck, Daley, & Hill, 2005). In a report estimating national prevalence rates of ADHD and LD among children aged six to 17 years in the USA, Pastor and Reuben (2008) found that, from a large sample of 22,969 children, approximately 5% had ADHD without LD, 5% had LD without ADHD, and around 4% had both conditions, with co-morbidity being more likely among an older subgroup of the participants (aged 12 to 17 years). This study (Pastor & Reuben, 2008) did not use a diagnostic or screening procedure in itself. Instead, the methodology was to ask parents “Has a doctor or health professional ever told you that (sample child) had ADHD or attention deficit disorder?” and “Has a representative from a school or a health professional ever told you that (sample child) had a LD?” (Pastor & Reuben, 2008, p2). In this regard it is possible that the numbers reported may be an underestimate, as many children do not have a formal diagnosis of their difficulties. Nonetheless, it suggests that there is again a rate of co-occurrence of LD in the ADHD population greater than the rate expected in the general population, which is reported to be around 2% (Emerson & Hatton, 2008). The studies above both used methods of parental report to identify those with LD, however, the use of validated screening measures has been described as particularly helpful for research purposes in settings where individuals with LD may be over-represented (McKenzie & Murray, 2014).

1.2.4 Traumatic Brain Injury

Traumatic brain injury (TBI) has been less commonly studied in relation to ADHD than some of the conditions mentioned previously. However, there is a growing body of research suggesting that there are links between the two that are clinically important to understand. It has been reported that there may be a bi-directional relationship, with behavioural symptoms of ADHD presenting a risk factor for TBI (Keenan, Hall, & Marshall, 2008) and TBI in itself, particularly moderate or severe trauma, being a risk factor for development of secondary ADHD symptoms (Max et al., 2004). As with ADHD, there are much higher rates of TBI reported among offender populations, than in the general population. It has been reported that around 8.5% of the general population experience a TBI event in their lifetime, with adolescence and young adulthood a particularly risky time for this (Williams, 2012), but the rate rises to 60% among a group of young offenders (mean age = 16 years) with 46% reporting that they lost consciousness as a result (Williams, Cordan, Mewse, Tonks, & Burgess, 2010). Both ADHD and TBI are commonly characterised by behavioural disinhibition (Ornstein et al., 2013) and so in young people both could be important to consider when investigating behavioural difficulties. Recently a short screen has been developed that assesses both frequency and severity of TBI and has been piloted in research (Williams et al., 2010).

It is clear from the literature discussed so far that co-morbidity seems to be the rule rather than the exception for young people with ADHD. It is therefore very important in research to consider conditions that commonly co-occur with

ADHD in order to understand the clinical needs of young people who are impaired by symptoms. Indeed, greater levels of difficulty can be found where there are co-morbid behavioural problems, and high levels of crossover between conditions may influence treatment outcomes.

1.3 Treatment of Attention Deficit Hyperactivity Disorder

For those with a formal diagnosis of ADHD, a range of treatments are shown to be effective including both pharmacological and psychological approaches. Guidelines for ADHD published by the National Institute for Health and Clinical Excellence (NICE) recommended that, for school-age children with ADHD and moderate levels of impairment, the first-line treatment should be a group training or education programme for parents and carers. Such a programme will typically aim to increase positive one-to-one interactions between parent and child, and will include the provision of specific management strategies for parents (see Young & Amarasinghe, 2010). This will usually make use of behaviour modification techniques to discourage the behavioural symptoms of ADHD, such as reward and response cost systems whereby the child can earn rewards for positive behaviour. Such treatment may or may not run alongside a Cognitive Behavioural Therapy (CBT) or social skills training programme for the child themselves (NICE, 2009).

One group programme recently piloted in two UK primary schools made use of a child-centred group intervention, alongside parent involvement via a 'coaching role' to support the skills taught to the children in the group (Young,

2013). The programme, called 'RAPID' is a manualised CBT intervention that teaches attention and listening skills, impulse control, emotional control, problem-solving, and interpersonal and social skills through nine hour-long sessions with a detective theme. The sessions are supported by parents/carers who receive training for their role as a 'coach' for child. Young (2013) used a single group design to pilot the programme and found that it was feasible for clinical psychologists or teaching staff to deliver this programme in a school setting. It was also reported that symptoms of ADHD, as well as associated emotional and conduct problems, improved significantly for those who received the intervention, with medium to large end of treatment effect sizes (Young, 2013).

Teachers may also be involved in delivering treatment programmes, and a review of treatments for ADHD across the lifespan reported that classroom behavioural interventions could suffice for the child-focused part of the treatment for those with moderate impairment (Young & Amarasinghe, 2010), again this could include reward and response cost systems. For adolescents, there is limited evidence for the use of school-based behavioural interventions (Young & Amarasinghe, 2010), and for those with ADHD and moderate impairment the NICE guidelines stated that individual psychological interventions, possibly CBT, should be considered as they may be more effective and acceptable than group parent training and education programmes, group CBT, or social skills training (NICE, 2009). Such treatment models are also likely to be helpful where there are co-morbid disorders such

as depression or anxiety, as key aspects of treatment for these disorders will include cognitive as well as behavioural techniques (NICE, 2009).

If non-pharmacological interventions such as those described above are not successful in reducing the impact of ADHD, then those with persisting impairment should be offered medical treatment, according to treatment guidelines (NICE, 2009). This has been further supported by a recent practitioner review of treatment efficacy evidence, which recommended that, for adolescents (12 to 18 years of age), primary care clinicians should prescribe approved medications for ADHD, possibly alongside behaviour therapy but ideally taking a combined approach (Wolraich et al., 2011).

Pharmacological treatment necessarily requires inclusion of medical professionals and, in the UK, might typically be managed through a General Practitioner or a Child and Adolescent Mental Health Service (CAMHS) where a combined approach to treatment could be taken within the same service.

1.4 Negative outcomes for untreated Attention Deficit Hyperactivity Disorder

If left untreated, symptoms of ADHD can have a wide-reaching detrimental impact for individuals who commonly experience adverse neuropsychological, clinical and psychosocial effects (Young & Gudjonsson, 2008). As mentioned previously, it is widely accepted that symptoms of ADHD do not remit in a significant proportion of cases (Faraone et al., 2006), and symptomatic individuals, including those in partial remission of symptoms, are reported to be more likely to experience educational and occupational difficulties, co-

morbid psychiatric problems, substance misuse, and interpersonal relationship problems (Young & Gudjonsson, 2008).

Adolescence appears to be a particularly risky time for young people with ADHD. It has been reported that those with attention and impulsivity problems exhibit increased risky behaviour in adolescence such as drug-taking and risky sexual behaviour leading to secondary health problems (for a review see Nigg, 2013) and greater risk-taking behaviours while driving (Jerome, Segal, & Habinski, 2006). A recent practitioner review of treatments for ADHD recommended that special concern should be taken to controlling symptoms of ADHD while driving, because of the inherent risks of doing so otherwise (Wolraich et al., 2011). ADHD also represents a particular risk for antisocial behaviour and offending. Internationally, high rates of ADHD are reported among populations of young offenders, for example in England (Young et al., 2010), Canada (Ulzen & Hamilton, 1998), Finland (Haapasalo & Hämäläinen, 1996), Sweden (Dalteg & Levander, 1998), Germany (Retz et al., 2004), and the USA (Timmons-Mitchell et al., 1997). These high rates are thought to be explained, at least in part, by the very nature of ADHD symptoms as these young people struggle to manage poor impulse control and high levels of hyperactivity (Babinski, Hartsough, & Lambert, 1999; Stevenson & Goodman, 2001). The relationship between ADHD and offending has been associated with this from a young age (e.g. Retz et al., 2004), and a four to five-fold increase in arrest rates has been reported among adolescents with ADHD compared to non-ADHD controls (Satterfield, Swanson, Schell, & Lee, 1994). Young people who are experiencing symptoms of ADHD alongside

behavioural symptoms such as those found in CD may be at even greater risk (e.g. Lynam, 1996; Young, Misch, Collins, & Gudjonsson, 2011). It is important to consider the methodological limitations of such studies, many of which rely on screening measures to determine ADHD diagnostic status. However, screening measures, particularly those based directly on diagnostic criteria such as the DBRS, have been found to be reliable and valid proxies for full clinical assessments in research (e.g. Barkley & Murphy, 2006). Furthermore, forensic prevalence research relying on screening measures alone has been supported by studies that used more comprehensive diagnostic interviews in addition to screening measures (e.g. Timmons-Mitchell et al., 1997; Young et al., 2010).

Despite the large body of research outlining the risks of untreated ADHD and the high rates of mental health problems among these young people, it has been estimated that up to 70% of children and adolescents struggling with clinically significant symptoms do not receive appropriate interventions early enough (Children's Society, 2008). Not only do interventions exist that are effective in reducing symptoms and impairment, they are also reported to provide good value for money as measured by economic benefits and savings in subsequent costs to the public (Fonagy et al., 2014), which are significant for ADHD.

A recent European study reported that, on average, the annual national ADHD-related costs ranged from €1,041million to €1,529 million (Le et al., 2014). In the UK, high costs have also been reported (Khong, 2014). Khong

(2014) took a lifetime approach to his economic modelling of the costs of services consumed by those with ADHD and their families. It was estimated that those with ADHD posed extra costs of healthcare across their lifetime of £22,315, extra costs to education of £45,075, and reduced earnings across the lifetime of £34,745. Khong (2014) further extrapolated these costs based on the estimated numbers of children with ADHD in the UK, and estimated the total long-term cost of ADHD, for each one-year cohort of children, to be in the region of £1,070million. Research therefore suggests that ADHD is a condition with high cost to both the individual and society if it remains unidentified. Untreated ADHD can pave the way into educational, occupational, and psychiatric difficulties for many, and contact with the criminal justice system is also common. Both economic studies described (Khong, 2014; Le et al., 2014) outlined the great financial expense incurred by services and society, with the greatest cost category reported to be education even though, in a lifetime, this represents a very small timeframe (Khong, 2014).

1.5 Attention Deficit Hyperactivity Disorder and education

ADHD contributes to impairment at school by the very nature of its symptoms. Difficulties with focussing on tasks, listening when spoken to directly, and following and completing instructions, (APA, 2013) all relate to important aspects and requirements of the classroom environment and, as such, symptoms of ADHD likely contribute to decreased performance at school. Children with ADHD have been reported to have problems completing seatwork independently and accurately, and achieve lower results on tests

compared with their non-ADHD peers (see DuPaul & Stoner, 2003). Similarly, a study of 55 German young people aged seven to 11 who met diagnostic criteria for ADHD (and were not receiving any specific intervention or medication for this) found that higher levels of teacher-rated ADHD symptoms were significantly associated with the young person exhibiting fewer on-task expected behaviours like reading, writing, doing maths, and more inattentive, off-task behaviours such as looking out of the window and being preoccupied with something other than the required activity (Lauth, Heubeck, & Mackowiak, 2006).

Research of parental opinion also found that those with ADHD were thought to be at a higher risk of educational failure and were up to seven times more likely than other children to receive special education or to repeat a grade (LeFever, Villers, & Morrow, 2002). There is further evidence from cohort and longitudinal research studies that those with ADHD are more likely to repeat academic years, have lower exam-grade attainment, and are less likely to graduate from College or High School compared with their non-symptomatic peers (Barbarese, Katusic, Colligan, Weaver, & Jacobsen, 2007; Barkley, Murphy, & Fischer, 2007; Frazier, Youngstrom, Glutting, & Watkins, 2007). In the last UK epidemiological survey, results of interviews with parents, children, and teachers found that approximately two-thirds of children with hyperkinetic disorders were behind in their overall scholastic ability, with 18% reported to be three or more years behind (Green et al., 2004). They were also more likely than children without hyperkinetic disorder to have been absent from school for extended periods (Green et al., 2004), which may additionally be a

reflection of some of the adverse social backgrounds reported previously for children with such difficulties.

As well as symptoms of inattention, young people with ADHD (and their teachers) may also struggle to manage the behavioural facets of the disorder in a school environment. Symptoms such as frequently leaving their seat, talking excessively, and a tendency to leave the classroom without permission (APA, 2013) are characteristic of ADHD and are likely to be viewed as disruptive. Abikoff et al. (2002) reported that, in their study of 403 boys and 99 girls (aged seven to 10 years), those with ADHD deviated significantly from classroom norms, and further research has identified that levels of teacher-rated ADHD symptoms are significantly associated with disruptive off-task behaviours like talking to a neighbour, running around the classroom, and 'clowning around' (Lauth et al., 2006).

Studies like those described above have focused, to a greater extent, on children of primary school age. However, symptoms of ADHD persist for many young people and are likely to continue impacting on education throughout adolescence, particularly the more 'hidden' symptoms of inattention that may remain even if hyperactivity decreases (Faraone et al., 2006). The risk of educational difficulties may in fact heighten as requirements and expectations within education systems change and increase with the transition to secondary school (Thompson, Morgan, & Urquhart, 2003). This means that the young person may appear as though their ADHD has improved, although persisting (perhaps sub-threshold) symptoms may still present a need for targeted

support at a time when it is particularly needed. It is further likely that co-morbid behavioural difficulties contribute to increased impairment in this regard for many young people, and Russell, Ryder, Norwich, and Ford (2015) suggested that many studies of educational problems have focused on those with developmental disorders while those with undiagnosed behavioural problems have often been overlooked. Given the high levels of co-morbidity, not identifying these individuals is an important oversight in research and practice that may contribute to impairment in the classroom being poorly understood. Indeed, the Department for Education (DfE; 2012) identified that disruptive behaviour may indicate that the young person has needs that are not being met, and a recent practitioner review confirmed that an important barrier to supporting the needs of young people is poor identification of symptoms in the first place (Wright et al., 2015).

1.6 Identifying the needs of young people

Behavioural difficulties may be evident from a young age, with an Ofsted report suggesting that around 15% of five-year-old school-starters display 'troublesome' behaviour that might impede their learning, and that up to 5% of pupils display challenging behaviour at some stage of schooling (Ofsted, 2005). Assessment procedures are therefore commonly triggered by educational staff in the UK, particularly special educational needs (SEN) coordinators, and it has been reported that teaching staff are also often the first port of call for parents with concerns about their child's mental health. In their national UK survey, Green et al. (2004) found that 91% of parents of children

with hyperkinetic disorders and 81% of parents of children with conduct disorder had sought advice about their child from a professional, and this professional was most commonly a teacher. In this survey, other professionals had been approached including mental health specialists and special educational services including psychologists. However, Sayal, Goodman, and Ford (2006) identified that although many parents of children with ADHD had discussed concerns about their child with teachers this help-seeking with did not extend to primary care or specialist healthcare services. This suggests that education providers are well placed to support the identification of difficulties, perhaps through discussions with parents and onward referrals to clinical services.

One mechanism for identifying the needs of young people in relation to their education in England is through a statutory assessment, which marks the beginning of the process to obtain an Education and Health Care Plan (EHCP), formerly a Statement of SEN. According to the SEN Code of Practice, within the education system in England a child is considered to have SEN “if they have a learning difficulty which calls for special educational provision to be made for them” (Department for Education and Skills [DfES], 2001, p6). The learning difficulty criterion in this context may be met by the child having significantly greater difficulty learning compared to most other children their age, or if they have a disability that prevents or hinders them from using commonly provided local authority education services, as long as the difficulties are not solely the result of the teaching language differing from the child’s home language. Within this framework, ADHD symptoms may

contribute to learning difficulties in a category of 'behavioural, emotional and social difficulties'. Children with hyperkinetic disorders have been reported to be over four times more likely than their peers to have formally recognised SEN (71 per cent compared with 16 per cent) and around half of those with conduct disorders were rated by teachers as having SEN (Green et al., 2004). However, there has been a lack of clarity between Local Authorities as to whether behavioural difficulties attributed to ADHD may constitute a SEN in isolation or whether some additional learning needs should be present to justify SEN identification (Wilkin et al., 2005). Currently, a diagnosis of ADHD on its own is not grounds for an automatic statutory assessment, nor is one required for an EHCP to be issued. Rather, the individual needs of each child are the focus of the assessment (see DfES, 2001).

1.7 Supporting the needs of young people at school

Any educational institution subject to the SEN Code of Practice is obligated to make every effort to ensure that children identified as having SEN are not placed at a disadvantage because of their additional needs. Schools typically take a staged approach to intervention, assessing and monitoring the young person's progress regularly (DfES, 2001). Historically, this has been done through the compilation of an Individual Education Plan outlining educational targets and any additional educational provision to be put in place when the young person is thought not to be making the progress that would be expected (DfES, 2001). The first level of support has been known as School Action, which can include the in-class provision of extra teaching staff and possibly

different materials, equipment or teaching strategies to facilitate learning (DfES, 2001). Where School Action does not lead to progress, a further level of support, School Action Plus, may be implemented. School Action Plus typically involves advice from external agencies (e.g. Health Authority or Social Services) and may also include an Educational Psychologist becoming involved and/or one-to-one support being provided (DfES, 2001).

For those with difficulties associated with ADHD, expert advice has been published with regard to in-classroom management of symptoms. O'Regan (2015) describes supportive strategies that may help to limit the impact of the core symptoms of ADHD in the classroom, including reducing over-activity by using timed activities where the child is encouraged to 'beat the clock', lengthening attention span using cards on the child's desk to prompt them to monitor their own attention, and promoting impulse control by helping the young person identify impulsive versus 'thought-out' acts to increase the time between thinking and acting. Research has also suggested that those with ADHD can be assisted in the classroom through amendments to the task itself. For example, it was found that when tasks are structured to match individual academic level, and when performance has frequent and consistent consequences, the academic success of children with ADHD increases (DuPaul & Weyandt, 2006). Computer assisted instruction has also been found to improve achievement in mathematics, and increases on-task behaviours compared with independent seatwork alone (Mautone, Dupaul, & Jitendra, 2005). However, limited time and resources may make it difficult to

provide such individualised support in a mainstream education setting (Mautone et al., 2005).

Within mainstream education in the UK, support in the classroom is typically provided by teaching assistants, who make up a large percentage of the workforce in mainstream schools in England (Blatchford, Webster, & Russell, 2012). In particular, they may be present to support learning and facilitate the delivery of interventions and booster programmes for literacy and numeracy, and to support the inclusion of young people with SEN in mainstream settings (Blatchford, Russell, & Webster, 2012). However, it has been reported that teaching assistant support does not lead to academic improvement for many young people (Blatchford, Russell, & Webster, 2012; Blatchford, Webster, & Russell, 2012), and it is reported that teachers have been “under-prepared for dealing with the challenges and complex difficulties posed by pupils with statements” (Webster & Blatchford, 2013, p3). The challenge may be greater still if there are co-morbid difficulties contributing to a ‘double deficit’ in the classroom and it may be that specific interventions over and above ‘broad brush’ strategies to boost learning are required to address underlying needs.

1.7.1 Attention Deficit Hyperactivity Disorder and school exclusion

For many young people with additional education needs, including those with ADHD, who do not benefit from support available in mainstream settings, the educational pathway typically results in attendance at some alternative form of education (Sodha & Margo, 2010). ADHD is a significant contributor to

suspension and expulsion from school (e.g. Lee & Hinshaw, 2006). In the UK, a 2010 survey of 526 families carried out by the Attention Deficit Disorder Information and Support Service reported that 39% of those with ADHD had received fixed-term exclusions from school and 11% of children with ADHD were permanently excluded (as cited in O'Regan, 2010). These figures are considerably higher than the general population exclusion rate of 0.07% reported in recent published figures (DfE, 2012). Although a downward trend has been identified in the frequency of permanent exclusions, young people with SEN remain up to nine times more likely to be excluded than those without (DfE, 2012). However, the nature of the relationship between ADHD and school exclusion has not been well studied in the scientific literature to date (O'Regan, 2010).

Disruptive behaviour is commonly cited as the reason for exclusion (O'Regan, 2010), and was recently identified by the DfE (2012) as an indication that the young person may have needs that are not being met. This would likely include a group of young people with symptoms of ADHD as it has previously been reported that symptoms of ADHD in adolescent boys was a significant predictor of institutional disruptive behaviour (Young et al., 2011). Those with co-morbid behavioural difficulties are further likely to fall into this group, with research suggesting that one-third of those with CD had been excluded from school and 22% more than once (Green et al., 2004). However, it may be that meeting these potential unmet needs is not a priority in the education system within which "...even the discussion about pastoral support programmes is about confronting and diverting the unwanted behaviour and not, for the most

part, about meeting unmet needs” (Parsons, 2005, p188). Unfortunately, for those with these needs, the educational pathway commonly results in exclusion from mainstream education (Sodha & Margo, 2010), and disruptive behaviour in particular has been identified as a key factor in decisions taken to exclude young people from mainstream classrooms (O’Regan, 2010).

It is therefore clear that young people with ADHD are likely to struggle with the typical requirements of a formal education. Difficulties experienced in education are likely to have further implications for opportunities in later life including employment and earning prospects, even in cases where symptoms remit (Khong, 2014). There are likely to be indications of difficulties from early on in their school career, and early identification is essential in order to support those with ADHD and related impairment in the classroom and minimise the impact of their symptoms. Effective treatments exist for ADHD if it is identified properly, as described previously. However, a number of provisions and support steps exist within the education sector that are commonly provided to those who appear to be struggling in the classroom. Additional staff members provide greater levels of one-to-one support for young people, and a number of behavioural strategies have been recommended. However, these are not always successful and exclusion from the mainstream classroom remains common for those with ADHD and/or SEN or behavioural difficulties.

1.8 Alternative educational provision

Alternative provision refers to a non-mainstream education service that is publicly funded, in which young people attend some form of timetabled educational activity (Ogg & Kaill, 2010). Types of provision vary widely between Local Authorities and there may be a variety of reasons for placement including emotional and behavioural difficulties, vulnerability, mental health problems, additional physical needs, 'failing' even without any of these difficulties, or temporarily not having access to a school place in a mainstream setting (Taylor, 2012). It is reported that those attending alternative provision are about twice as likely to qualify for free school meals compared with their peers in mainstream education, and are likely to have historical poor school attendance and be known to Social Services and the Police (Taylor, 2012). It has been recently acknowledged that the group of young people in alternative education, two thirds of whom are boys, predominantly includes those in school years 10 and 11 who have behavioural difficulties that may be associated with SEN (Taylor, 2012). For permanently excluded young people under 17 years of age, the most common types of alternative provision are Pupil Referral Units (PRUs) or Special Educational Needs (SEN) schools.

1.8.1 Pupil Referral Units

A PRU is considered to be any school that a Local Authority sets up in order to meet their statutory duty to provide education (Ogg & Kaill, 2010). According to statutory guidance from the DfE (2013), local authorities are not required to

have a PRU, which may partly explain the variation in provisions between localities. In 2008, it was reported that almost half of the young people in PRUs were attending as a result of their exclusion from mainstream education and that over half of the children in other alternative educational placements had started this journey at a PRU (Department for Children, Schools, and Families [DfCSF], 2008). PRUs provide a higher staff to student ratio in the classroom than a mainstream setting, and Taylor (2012) identified that 'good' PRUs are able provide appropriate support when a behavioural difficulty arises and have capacity to support young people with serious emotional difficulties to improve their behaviour. Typically, PRUs do not provide access to a full curriculum but can support individuals to attend other establishments for teaching in particular subjects.

1.8.2 Special Educational Needs schools

Alternatively, the young person may attend a non-mainstream school for those with SEN. Such a school commonly includes young people with a diagnosis of learning disability, although may also include those with sensory difficulties, physical health needs, communication needs, and specific learning problems, as well as those with social, emotional, mental health, and/or behavioural difficulties including ADHD (DfES, 2001). SEN schools provide a similar learning environment to PRUs with a high staff to pupil ratio (Martin & White, 2012), but young people may not be diverted to a SEN school if they have a primary emotional or behavioural need that is not accompanied by additional learning difficulties or disability.

1.8.3 Numbers of children in alternative education

Although data are not routinely available on the numbers of young people in alternative provision (Taylor, 2012), figures from the Alternative Provision Census 2011 conducted by the DfE indicated that PRUs were providing education for 14,050 pupils, and 23,020 pupils attended other alternative provision settings (DfE, 2011), many due to impairment or difficulties caused by additional needs that may or may not have been formally identified by a Statement or an EHCP. In the UK it has been reported that around 75% of children in education in a PRU have SEN, many of whom have difficulties associated with ADHD (DfCSF, 2008). Place, Wilson, Martin, and Hulsmeier (2000) reported that over two thirds of young people in a UK school for those with emotional and behavioural difficulties met diagnostic criteria for a diagnosis of ADHD. It has been further reported that, not only are SEN schools educating greater numbers of children with higher levels of need (as those with lower levels are increasingly likely to remain in mainstream settings), but they have also historically catered for a broader spectrum of needs within the school as the number of such schools has fallen faster than the number of pupils requiring such provision (Audit Commission, 2002). Ogg and Kaill (2010) went as far as suggesting that “PRUs often have the feel of a ‘dumping ground’ for young people that other institutions have given up on” (p6), and it has been documented as a concern by Taylor (2012) that, even with consideration of their difficulties, the educational performance of young people in alternative educational provision is far below that of their mainstream peers

with only 1.4% achieving five or more GCSEs at A* to C grade, including English and Maths (DfE, 2011).

ADHD and associated educational and behaviour management difficulties are likely to be a challenge both in and outside of mainstream education settings. However, it has also been recognised that little is known about the overall pattern of needs of these young people (Taylor, 2012) who may or may not come into alternative provision with pre-identified symptoms (Audit Commission, 2002). Recommendations have been made in research and policy papers about improvements that could be made in alternative provision and the support that should be provided for excluded children in such settings. For example, Taylor (2012) identified that there ought to be an increased focus, nationally and locally, on the effective assessment and identification of children's needs. Further recommendations have been made by an expert panel on the provisions that should be made for young people with mental health needs, including early intervention, improved integration of services and partnership working so that families with the most vulnerable children and the most complex needs can be helped to access services (Department of Health [DoH], 2015).

Theoretically, many children with ADHD symptoms may benefit from placements in alternative education settings, as PRUs and SEN schools typically provide smaller class sizes, which, particularly in SEN schools include peers of a similar educational ability, and greater individual support and structure (DfES, 2001). Assessing and identifying the specific needs of young

people in alternative education has therefore been recently identified as an important area for research (Audit Commission, 2002; O'Regan, 2010; Taylor, 2012) in order that appropriate support can be effectively targeted.

Furthermore, there has been little focus in the academic literature on the provisions made for those with difficulties such as ADHD, and it is possible that young people in alternative education may be managed as a homogenous group of 'problem' children, with similar support broadly available for everyone.

1.9 Summary

The papers discussed here demonstrate that ADHD can have a detrimental impact on a young person's ability to reach their potential in education. ADHD is reported to impact on the young person's ability to learn and perform well academically, and may contribute to disruptive behaviour in the classroom, especially if there are co-occurring behavioural or emotional symptoms. A disproportionate number of young people in alternative educational provision have been reported to have mental health needs such as ADHD, many of whom have not had this difficulty identified and may or may not have an EHCP or Statement of SEN to flag up their need for extra support. This under-identification of needs means specialist provisions are not sought, which may contribute to exclusions from mainstream education when 'standard' educational interventions do not lead to progress. However, the relationship between ADHD symptoms and school exclusion itself has not been well studied and has been identified as an area of need in research (O'Regan, 2010).

With regard to provisions made to support young people with additional needs in education, recommendations have been made in research and policy papers about the support that should be provided in both mainstream and alternative education provision. One important area for improvement in service provision had been to better assess and identify the specific needs of the young people, which will include identification of difficulties such as ADHD (Taylor, 2012). Furthermore, although papers were found that identified trends in alternative provision in terms of the numbers of children attending different educational establishments and variation in availability of alternative education in different local authorities, there appeared to be little published research focussing on the specific provisions made within UK alternative education settings and the extent to which these are targeted, in practice, for those with particular mental health and/or behavioural difficulties. This study therefore aimed to screen young people in PRU and SEN school provision for ADHD and common co-morbidities, and to investigate the extent to which provisions appeared to be targeted, in mainstream and alternative provision, to those with the greatest level of need in terms of their diagnostic status.

The study appeared to be unique in its focus on provisions made in mainstream and alternative education settings for those with high and low levels of ADHD and possible co-morbid behavioural, emotional, and learning needs. Results would provide information about the pattern of needs among this group of young people, and would give some indication as to the extent to which educational provisions are matched to the needs of young people attending PRU and SEN school settings. This study was directly in line with

recommendations in a recent report on improving alternative education, which called for an increased focus on the assessment and identification of these children's needs (Taylor, 2012), and followed on from studies suggesting that working to target such symptoms for support would not only support them to achieve in school but would be of benefit in improving wider outcomes for young people with ADHD.

1.10 Research questions and hypotheses

1. What are the psychological and behavioural needs of young people accessing alternative education provision? Hypothesis 1: High rates of ADHD and common co-occurring conditions were expected, as identified by self- and informant-report screening measures, in line with previous research among similar populations.
2. Do current levels of impairment from symptoms differ for those screening positive or negative for ADHD? Hypothesis 2: It was expected that those screening positive for ADHD would exhibit greater levels of academic impairment as rated by teachers, and be responsible for greater frequency and severity of disruptive behaviours, than those screening negative.
3. What were the common reasons for attending alternative educational provision? Hypothesis 3: It was expected that those screening positive for ADHD would be more likely than those without ADHD to have a behavioural reason for attending alternative provision, as identified from school records.

4. What provisions were made within the mainstream educational setting, as identified from school records, to support the young people with their presenting difficulties?

5. To what extent were provisions in alternative education, as identified by school records, tailored for individuals with or without additional needs?

Questions four and five were exploratory to investigate the extent to which support was being tailored towards the needs of those with or without ADHD.

2. Method

2.1 Design

A small cross-sectional study of between-participants design was used in order that statistical comparison could be conducted between those screening positive for Attention Deficit Hyperactivity Disorder (ADHD) and those screening negative, comparing the clinical co-morbidity, levels of impairment including academic performance and severity and frequency of disruptive behaviour of the two groups. ADHD was chosen as the primary independent variable because key symptoms such as inattention, not following instructions, and leaving the classroom without permission, are the types of behaviours that may be closely associated with academic impairment and school exclusion (O'Regan, 2010). However, common co-morbid difficulties that appeared to be theoretically relevant, namely Conduct Disorder (CD), Oppositional Defiant Disorder (ODD), learning disability (LD), anxiety and low mood, and TBI, were also screened for to investigate the pattern of needs presented by this group of young people. Exploratory analysis was conducted of the information available from school records about the reasons for attending the alternative education setting, and any educational provisions or support that had been provided prior to leaving mainstream education and in the current setting. This information was coded to enable quantitative methods of analysis to be used (e.g. whether one-to-one support was provided would be coded as either 'Yes' or 'No').

2.2 Ethical approval

Ethical approval for the study was obtained from the Royal Holloway Psychology Department ethics committee (Reference 2013/019R2). An extension to the end date was further granted by the ethics committee following a period of maternity leave during the initial study time. See Appendix A for both approval confirmations.

2.3 Power calculation

In their paper reporting on the development of the Impairment Rating Scale (IRS; Fabiano et al., 2006), differences in overall impairment scores between those with and without ADHD indicated differences of large effect size according to Cohen (1992). The measures that Fabiano et al. (2006) used to screen for ADHD and CD in this study consisted of the diagnostic criteria for these conditions, as do the Disruptive Behaviour Rating Scales that were used in this study. In order to detect differences of large effect size ($d = 0.7$) between those with and without ADHD using t-tests or chi-square analysis with 80% power, a total sample of 52, $n = 26$ in each group, was indicated (Cohen, 1992). The overall sample total was reached in recruitment for the thesis study, with 50 usable screens resulting (ADHD $n = 22$; non-ADHD $n = 28$). This paper was chosen to inform the power calculation as the scale the authors were evaluating was that selected as a measure of impairment for the thesis study and the diagnostic groups were classified using the same diagnostic screens as those included in the thesis study. Post-hoc power

analysis using tables provided by Cohen (1988) indicated that the 50 screens would have maintained sufficient power to detect differences of large effect size.

2.4 Participants

2.4.1 Young people

Fifty-two young people were included from three pupil referral units (PRUs) and one special educational needs (SEN) school across two London boroughs. The sample was obtained from the four sites as follows (pseudonyms are used): Hazel PRU n = 8 (15%), Maple PRU n = 22 (42%), Sycamore PRU n = 7 (13%), and Chestnut SEN school n = 15 (29%). The mean age of the total sample was 13.32 years (standard deviation = 1.27, range = 11 to 16), with the majority being male (n = 46, 88.5%). Ethnic background was available for 49 participants, as follows: Black British n = 3 (6%), Black Caribbean n = 2 (4%), Black Other n = 1 (2%), White British n = 32 (66%), White European n = 2 (4%), Asian n = 3 (6%), Other n = 3 (6%), Mixed Other n = 3 (6%).

2.4.2 Parents

There were difficulties experienced recruiting parents in to the study. Many parents did not attend the school to meet with the researcher to discuss the study and schools were not able to share further contact details without their

consent to do so. Of the parents that did meet with the researcher, agreed a time to complete the measures over the phone, and gave a telephone number, several did not answer the call or could not be reached on the provided phone number. After two attempts to contact the parents who had agreed, no further attempts were made. In total only five parents were successfully recruited and completed measures for study therefore this data was not used in statistical analyses.

2.4.3 Teachers

In total, eleven teachers completed the informant measures about 50 young people. At Maple PRU the measures were completed by two teachers whose lessons were used for data collection, at Sycamore PRU the measures were completed by two teachers whose lessons were used for data collection, at Hazel PRU the four members of staff present in the lesson completed the measures, and at Chestnut SEN school the measures were completed by the Deputy Head teacher and two class teachers.

2.4.4 Inclusion and exclusion criteria

All individuals, male or female, aged 11-16, in education at the PRUs or SEN schools were eligible for inclusion in the study providing they did not meet any of the following exclusion criteria.

- Unable to understand English: If a young person was not able to or did not wish to complete measures themselves, they were invited to complete them verbally with the researcher. It was therefore a requirement that they be able to understand English although they were not necessarily required to be able to read or write.
- Unable to give assent: If a young person's parent/guardian had not previously opted-out of the study but they were considered, by staff, to be unable to assent, they were not included.
- Risk of violence: If a young person was considered, by teachers, to pose a risk of violence that could not be appropriately managed in order to facilitate participation either in a group or individually, they were not included.
- Attending the school for assessment only: If a young person was attending the PRU or SEN school for assessment only and had not been in permanent education there, then they were not included as teachers would not have been well-placed to provide informant data.

Those with pre-identified mental health difficulties were not excluded from the study. Physical health conditions were not expected to influence participation in this questionnaire study and so were not excluded. Those with neurological difficulties were not specifically excluded providing any impairment did not meet the above exclusion criteria.

2.5 Measures

2.5.1 Disruptive Behaviour Rating Scales (DBRS; Barkley & Murphy, 2006, see Appendix B)

The DBRS comprises three screening questionnaires for symptoms of ADHD, ODD, and CD. The ADHD screen is comprised of 18 items relating to the core symptom domains of inattention, hyperactivity, and impulsivity; nine items (even numbers) make up the subscale for hyperactivity/impulsivity and nine (odd numbers) make up the subscale for inattention. Each item is rated on a 4-point Likert-type scale: 0 = 'Never or rarely', 1 = 'Sometimes', 2 = 'Often', or 3 = 'Very often'. Self-report and informant-report versions of the DBRS are available. The respondent must choose the rating that best describes their behaviour or, with regard to the informant-report versions, the rating that best describes the behaviour of the young person in question. The scales provide a symptom count of 0 to 9 for each of the two domains. The cut-off for a positive ADHD screen is six or more symptoms rated as '2' or '3' in either domain, classifying the individual as screening positive for 'ADHD of predominantly inattentive type' or 'ADHD of predominantly hyperactive/impulsive type', accordingly. If there are six or more items endorsed in both domains the screen is considered positive for 'ADHD of combined type'. If there are less than six items endorsed in both domains the screen is negative ('No ADHD'). Total scores may range from 0 to 54.

The DBRS ADHD screen also includes an assessment of impairment, in which respondents are asked to rate functioning in eight domains of daily activity including home life, education, social interactions, community activities, interpersonal relationships, recreational activities and management of daily responsibilities. Participants rate how often there are problems with functioning in each of these areas on a four-point scale (0 = 'Never/rarely', 1 = 'Sometimes', 2 = 'Often', or 3 = 'Very often'). These ratings are then summed to generate an impairment score that ranges from 0 to 24.

The second screen in the DBRS is a screen for ODD. This comprises eight items presenting the DSM criteria for ODD. As for the ADHD screen, each item is rated on a 4-point Likert-type scale: 0 = 'Never or rarely', 1 = 'Sometimes', 2 = 'Often', or 3 = 'Very often'. The respondent must choose the rating that best describes their behaviour or the behaviour of the young person in question. A positive ODD screen requires that four or more of these items are rated as '2' or '3'. Total scores range from 0 to 24.

The final part of the informant-report questionnaire includes 15 additional items relating to symptoms of CD. These items are rated as either 'Yes' or 'No' in terms of whether the young person has a history of this behaviour, for example, "Often bullied, threatened, or intimidated others." A scale on which three or more of the CD items are endorsed is taken to indicate the presence of CD. Total scores range from 0 to 15. According to the DBRS manual, the CD screen would typically be completed by a parent or carer and would not be included for teachers, as parents might be more likely to be able to answer the

questions included and teachers less likely to experience the young people in that way (Barkley & Murphy, 2006). However, given that there were significant difficulties recruiting parents for the study and, in light of the nature of this population and the high levels of involvement that school staff have with the young people and the multi-disciplinary professionals liaising with them (e.g. Young Offender teams, Child and Adolescent Mental Health Services), it was felt that they did, in fact, frequently experience the young people in this way and were able to answer these items. Staff were informed that, if they did not feel able to answer any part of the DBRS, they could leave it blank.

The DBRS has merit in being based directly on the diagnostic criteria for ADHD, CD and ODD. Research in adult samples has found that the inattention subscale of the DBRS ADHD screen has 75% sensitivity and 61% specificity, and the hyperactivity/impulsivity subscale has 69% sensitivity and 39% specificity (Quinn, 2003). Research has also found the DBRS to have acceptable psychometric properties among adolescents. Gomez, Vance, and Gomez (2013) reported, in their study of 214 adolescents aged 12 to 17 years (mean age = 13.82 years, standard deviation = 1.30), that the DBRS ADHD screen in particular has good internal consistency, with Cronbach's α values for the inattentive and hyperactive/impulsivity scales found to be .93 and .90, respectively. A study of adolescents using a version of the DBRS in which items were amended to be written in the first person (e.g. "...make careless mistakes in my schoolwork") reported that the inattentive and hyperactive/impulsive subscales also had good internal consistency, with Cronbach's α values of .86 and .82, respectively (Gomez, 2012). Parent and

teacher ratings on the DBRS have also been reported to be internally consistent and to have acceptable test-retest reliability (e.g. Willcutt, Chhabildas, & Pennington, 2001).

The DBRS has been validated in both community and clinical samples (e.g. Gomez et al., 2013) suggesting that the scales are acceptable to use in populations where both low and high levels of symptomatology would be expected. The fact that the thesis study samples a group of children in which those scoring highly for ADHD symptoms are represented to a greater extent than in a mainstream school population is therefore not thought to impact on the validity of the measure itself in terms of detecting the same clinical symptoms.

2.5.2 Child and Adolescent Intellectual Disability Screening Questionnaire (CAIDS-Q; McKenzie & Paxton, 2012) (See Appendix C)

This questionnaire was developed to provide a quick, easy-to-administer, screen to indicate whether a young person was likely to have a learning disability or not. The measure requires an individual to be rated 'Yes' or 'No' on seven skills, for example "Can the child/adolescent tell the time?" It can be completed as a self-report measure or by an individual who knows the participant well. In this study, the questionnaire was completed with the young person by asking them to demonstrate each of the required skills, for example read aloud, show the researcher they could tie their shoes, and so on. If a participant was not able or willing (some young people did not wish to write

anything, for example) to demonstrate the required skills or answer a question, then the missing items were informed by record reviews if possible. For example, if a participant would not write anything for the researcher but pieces of written work or reports completed by professionals who have worked with the young people that were available in the file, were used to inform the response. If sufficient information was not available from any of these sources to reliably answer an item, it was rated as 'Don't know' as required by the manual. Scores may range from zero to seven and are converted to a percentage score by dividing the number of points obtained by the number of answered items (i.e. excluding any 'Don't know' answers or refused/unanswered items) and multiplying by 100. A percentage score of 46% or below indicates the likelihood of learning disability, as per the manual (McKenzie & Paxton, 2012).

The CAIDS-Q is reported to have very good psychometric properties. McKenzie, Paxton, Murray, Milanesi, & Murray (2012) evaluated this measure in a group of 130 young people aged eight to 11 years and 11 months (mean age = 120 months, standard deviation = 12.74), and an older group aged 12 to 18 years (mean age = 172.61 months, standard deviation = 15.95). For both age groups, a significant positive association of large effect size was found between full scale IQ as measured by the Wechsler Intelligence Scales for Children – Fourth edition (Wechsler, 2003) and CAIDS-Q score, indicating convergent validity. Significant differences were found in the CAIDS-Q scores between those with and without an intellectual disability with those with an intellectual disability scoring significantly lower, as would be expected. The

sensitivity and specificity of the CAIDS-Q were 96.7% and 85.5%, respectively, for the younger group, and 90.9% and 94.9%, respectively, for the older group. The internal consistency of the CAIDS-Q was reported to be acceptable with a Cronbach's α value of .88. There were no significant correlations between age and CAIDS-Q score for either group in the study by McKenzie et al. (2012), suggesting that the screening measure is applicable across the age ranges.

2.5.3 General Health Questionnaire (GHQ; Goldberg & Williams, 1988, see Appendix D)

This measure is used to assess physical and psychiatric (non-psychotic) symptoms in non-clinical populations. It provides an objective, easy-to-administer assessment to indicate possible presence of psychiatric disorders among respondents, and is widely used in research (Goldberg & Williams, 1988). There are several versions of the measure available, varying in length (see Goldberg & Williams, 1988). For the purposes of this study, the GHQ-28 was selected as it is the only format to provide subscale scores for four different broad categories of disorder. The 28-item version of the GHQ was derived following factor analysis of the longer, 60-item questionnaire (Goldberg & Hillier, 1979). It includes four sets of questions (A to D), each of which is comprised of seven items relating to domains of 'somatic symptoms' (A), 'anxiety/insomnia' (B), 'social dysfunction' (C), and 'severe depression' (D). Each item is rated on a four-point Likert scale: 'Not at all', 'No more than usual', 'Rather more than usual', or 'Much more than usual'.

The GHQ can be scored in different ways depending on the purposes for which it is being used. The two most common scoring methods are 'Likert scoring' and 'GHQ (binary) scoring'. Scoring using the Likert method requires each response to be scored from 0 to 3 (the total score would range from 0 to 84) and a total score of 23 or more is taken to indicate presence of psychiatric distress or 'caseness'. Scoring using the GHQ or binary method dictates that responses of 'Not at all' or 'No more than usual' are both scored as 0, and 'Rather more than usual' or 'Much more than usual' are both scored as 1. Banks (1983) reported that the GHQ/binary scoring method was helpful and reported that the most accurate classifications of 'caseness' occurred when a cut-off score of 5/6 was used to identify overall distress in his sample of adolescents. However, according to the manual, scoring using the Likert scoring method is preferable if analysis of subscale scores is intended, and can also provide a less skewed distribution of scores than the GHQ/binary scoring method (see Goldberg & Williams, 1988). The Likert scoring method was therefore chosen in to enable more meaningful analysis of the individual subscales.

A further scoring method is presented in the manual, namely 'CHQG scoring'. According to Goldberg & Williams (1988), the GHQ has a tendency to miss those with longer-standing, chronic disorders by the nature of its response instructions, which ask individuals to rate the symptoms over the 'past few weeks' and includes a response of 'Same as usual'. Goldberg & Williams (1988) suggested that, where the intention is to detect as many cases as possible, the CGHQ method of scoring may be preferable to either the Likert

or binary scoring methods. The CGHQ scoring method was initially devised by Goodchild and Duncan-Jones (1985) as a way of detecting more chronic difficulties. They suggested that, for all negative items (i.e. those that indicate presence of psychological distress), responses of 'Same as usual' be scored as a '1' instead of a '0' as well, making it more sensitive to detecting longer standing symptoms. This scoring system was shown to result in increased specificity and sensitivity as there were fewer 'false negative' screens. However, no studies could be found assessing this scoring method in populations of adolescents and, according to the GHQ manual, research into the CGHQ scoring procedure was not conclusive. Goldberg & Williams (1988) therefore recommended that, if used, the CGHQ scoring method should be conducted as well as, rather than instead of, either of the standard scoring procedures. Considering this, and given that subscales A-D were required in the thesis study to investigate the clinical co-morbidity of psychiatric difficulties with ADHD, the Likert scoring method was selected, as described above.

The GHQ-28 has been widely used in health populations where it has been found to have good psychometric properties (Sterling, 2011). For example, the GHQ-28 has been reported to correlate well with the Hospital Anxiety and Depression Scale, a brief screen for anxiety and depression that is widely used in clinical settings (Robinson & Price, 1982), and Sakakibara, Miller, Orenczuk, & Wolfe (2009) reported from their systematic review of 13 different depression and anxiety assessment measures, that the internal consistency of the GHQ-28 was excellent (Cronbach's $\alpha = 0.82$) and that it was highly valid when compared with a clinical interview measure. Similarly, Failde & Ramos

(2000) reported that, among a population of adults hospitalised with suspected ischemic cardiopathy, the GHQ-28 classified participants according to their mental health difficulties to an acceptable degree, with a sensitivity of 76.9% and a specificity of 90.2%. This shortened version of the measure has also been found to have good psychometric properties in a large World Health Organization study (Goldberg et al., 1997), which found that age, gender, and educational level had no significant effect on validity. Among adolescents, the use of the GHQ-28 as a screening measure has also been supported. Banks (1983) investigated the validity of the GHQ in its 12-item, 28-item, and 30-item formats in a non-referred community sample of 200 young people aged 17 years, and reported that the lowest rates of misclassification were provided by the GHQ-28 when using a cut-off score of 5/6, which resulted in sensitivity of 100% and specificity of 84.5% in identifying likely psychiatric 'caseness'.

2.5.4 Traumatic Brain Injury (TBI) screening measure (Williams et al., 2010, see Appendix E)

This brief self-report screen was included as a measure of frequency and severity of TBI following its development and use in previous research on the subject by Williams et al. (2010). Each participant was asked "Have you ever had a blow to the head causing you to be knocked out, and/or dazed and confused, for a period of time?" If the response was positive, they were subsequently asked "How many times have you been knocked out and/or dazed and confused?"

Frequency of TBI was recorded as follows:

- 0 = 'No history'
- 1 = '1 injury'
- 2 = '2 injuries'
- 3 = '3 injuries'
- 4 = '4 injuries'
- 5 = 'More than 4 injuries'

Participants were asked to estimate the severity of the worst head trauma they had experienced by indicating the length of time they had been unconscious for, if at all. Severity ratings were recorded as follows:

- 0 = 'No history'
- 1 = 'Feeling dazed and confused but no loss of consciousness, minor concussion'
- 2 = 'Loss of consciousness < 10 minutes, mild TBI'
- 3 = 'Loss of consciousness 10 to 30 minutes, complicated mild TBI'
- 4 = 'Loss of consciousness 30 to 60 minutes, moderate/severe TBI'
- 5 = 'Loss of consciousness > 60 minutes, very severe TBI'

As described by Davies, Williams, Hinder, Burgess, and Mounce (2012), the inclusion of three levels of mild injury (i.e. 'minor concussion', 'mild TBI', and 'complicated mild TBI') provides greater sensitivity for a wider range of less

severe injuries and this is in line with guidelines published by the European Federation of Neurological Society guidelines (Vos et al., 2002). Furthermore, the distinction between these injuries is helpful as these categories have been used in research indicating that there are differences in outcome between these subgroups of mild TBI (Williams, Levin, & Eisenberg, 1990).

Participants were additionally asked to indicate what the cause of their injuries was and the age at which they sustained their “worst” head injury.

2.5.5 Academic performance rating (see Appendix F)

In addition to completing the teacher-report DBRS, teachers were asked to provide a subjective rating of each young person’s academic performance. This was rated on a 5-point Likert scale ranging from ‘Significantly below average’ to ‘Significantly above average’ compared to what would be expected from peers in mainstream education.

2.5.6 Record review

A record review of consenting participants’ school files was completed to obtain relevant background information including: 1) demographic information; 2) history of mental health diagnoses and treatment; 3) reason for attending alternative provision; and 4) frequency and severity ratings for any incidents of disruptive behaviour. Information about the provisions that were made for young people was also obtained from the record review.

The record review provided an objective measure of disruptive behaviour to supplement the DBRS. Incidents of disruptive behaviour in the following categories were coded for frequency during the two weeks preceding participation in the study:

- 'Verbal outburst'
- 'Physical aggression'
- 'Damage to property'
- 'Self-injurious'
- 'Fire-setting'
- 'Substance related'
- 'Other'

Incidents of physical aggression were additionally coded for severity as follows:

- 0 = 'No threat or physical violence'
- 1 = 'Threat of physical violence without violence being inflicted'
- 2 = 'Violence is inflicted but no injury is detected on examination and no significant pain'
- 3 = 'Significant pain, bruising or laceration inflicted'
- 4 = 'Any violence producing an injury requiring further medical investigation'

Incidents of this kind are not assessed by the DBRS, which are used to rate specific symptoms of disruptive behaviour rather than as a measure of its frequency and severity. The classifications of disruptive behaviour have been amended from those developed for a study of ADHD, CD, and critical incidents in an youth forensic setting (Young et al., 2011), which reported that those symptomatic of ADHD were responsible for more frequent critical incidents than their non-symptomatic peers.

2.5.7 Parent-report measures

In addition to completing an informant-report version of the DBRS, parents were asked to complete two further measures to assess the functional impairment of the young person: the IRS parent version (Fabiano et al., 2006; see Appendix G) and the Home Situations Questionnaire (HSQ) (Barkley, 2013; Barkley & Murphy, 2006; see Appendix H). The IRS assesses functioning of the young person in seven life domains (e.g. peer relationships, self-esteem, family functioning) giving a score from 0 ('No problem/definitely does not need treatment or special services') to 6 ('Extreme problem/definitely needs treatment or special services') for each domain and an overall total score (Fabiano et al., 2006). It has been reported to have good psychometric properties among the young people it was validated on (children aged four to 12 years) including acceptable concurrent, discriminant, and convergent validity, and test-retest reliability (Fabiano et al., 2006). The HSQ can be used to indicate how pervasive and severe the young person's behaviour is at home/in public situations (Barkley & Murphy, 2006). Parents are asked to rate

their young person's behaviour in 16 situations. According to the manual (Barkley & Murphy, 2006) the HSQ can be scored by adding up the number of situations in which the parent reports a problem and by further calculating the mean severity of problems using the severity ratings given for each of the situations.

2.6 Procedure

2.6.1 Recruitment

Following initial telephone consultation with the Head teacher or Deputy Head teacher at each of the research sites to establish their initial interest in supporting the study, the researcher met with Head teacher or Deputy Head teacher at each research site to discuss and plan the research at their PRU or SEN school. Young people meeting any of the exclusion criteria were identified so that they were not included in the rest of the recruitment procedure. All sites were in agreement that an opt-out procedure would be used to facilitate recruitment of young people in to the study. A prize draw incentive for young people and parents had been granted ethical approval. The Head teacher or Deputy Head teacher at each site was informed about the details of this and was in agreement. The draw was for three prizes of gift vouchers worth £40.00, £20.00, and £10.00. There was one prize draw for young people and one prize draw for parents, which were conducted using an online random number generator following completion of the data collection for the whole study.

An information sheet was sent to the parent/guardian/foster carer in the post. This included the researcher's contact details in order that any initial questions could be answered about the study to inform their decision about their child's participation, and also informed them of a date and time when the researcher would be at the school to answer questions in person. Where possible, to maximise the likelihood of parents attending, this was included as part of a parent's day or planning day, when parents would already be attending the school. The information sheet was accompanied by an opt-out form that they could return if they did not wish their child to be included in the study.

In line with inclusion/exclusion criteria, all young people whose parent/guardian/foster carer did not opt out were then invited to take part in the research. Dates, times, and lessons in which to collect the data were agreed with staff on a site-by-site basis. Staff informed the young people in advance that the study would be taking place, and the researcher then went through the study information with each participant, answering questions as required, before obtaining their assent to take part. For those who agreed to take part, the research was carried out during the school day either in small groups as part of a lesson supported by the researcher and a staff member or, in cases where greater support with reading the questionnaires was required, individually with the researcher.

For all participating children, teachers were asked to complete their measures separately and these were returned to the researcher by post. Parents were aware from their initial information sheet that the study also included the

collection of informant data from them. When they attended the school for a parent's day or planning day, they had an opportunity to ask further questions about the study and provide their written consent for their own participation. Consenting parents/guardians/foster carers were subsequently contacted by the researcher at an arranged time to complete their measures over the telephone. Figure 1 shows the recruitment procedure in diagrammatic form.

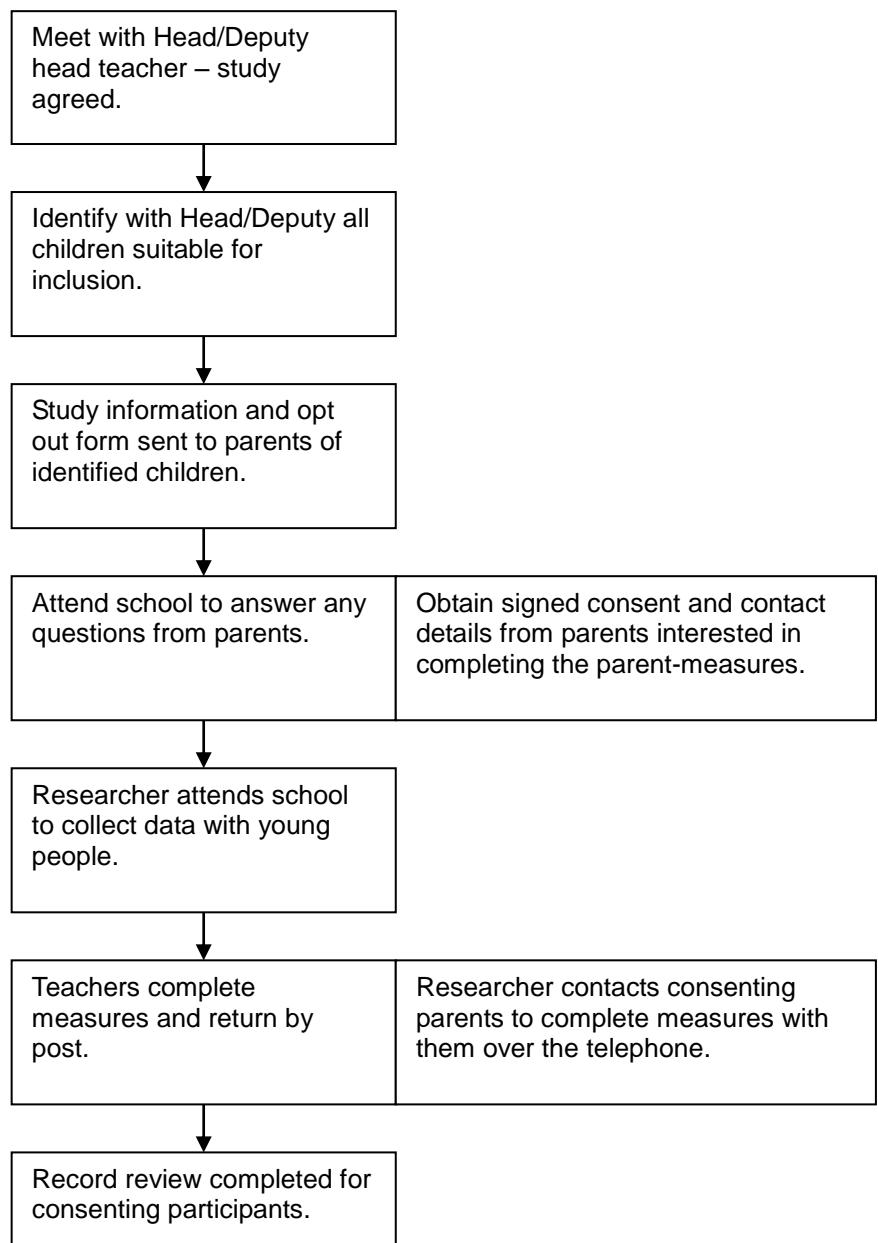


Figure 1. Flow chart of the recruitment process.

Within this recruitment procedure, parents could opt out of the whole study right from the start; young people could choose not to take part even if their parents had not previously opted out; parents could choose whether or not to take part themselves, separately to opting out for their child; and any participant could change their minds about their participation and withdraw their consent/assent at any time up to two weeks after the data collection was completed.

2.6.2 Data collection

At all three PRUs young people taking part completed the questionnaires with the researcher in small groups during lesson time, with additional support provided by staff as required. The measures took the young people around 20 minutes to complete. The researcher subsequently completed record reviews in the PRU reception offices for all consenting individuals. Teacher-report measures were completed for each young person and returned by post to the researcher who ensured that they were fully anonymised. Parent-report measures were completed by the researcher through telephone interview with the parents/guardians/foster carers that had consented to be contacted, although few were successfully recruited.

At the SEN school there were greater numbers of children meeting exclusion criteria and the Deputy Head teacher reported that participation in lesson was less manageable in their school. Participants were therefore seen individually outside of the classroom (one participant wished to be seen with support staff

present). Measures took around 20-30 minutes to complete. Information required for the record review was provided by the Deputy Head teacher, as they were unable to provide the researcher with access to the relevant computer systems and did not agree to the researcher having access to paper files.

Informant-report packs were left for teachers with first names of the young people only in order to maintain sufficient anonymity as these were to be posted back to the researcher. All questionnaires were fully anonymised upon receipt. Parent-report measures were completed by the researcher through telephone interview with the parents/guardians/foster carers that had consented to be contacted.

2.7 Service user involvement

Before the study began, the proposed recruitment and data collection procedures were discussed with the Head teacher at the site that had initially agreed to support the study, and were amended accordingly from the initial proposals. The Head teacher identified a young person and their parent who he thought would be willing to meet the researcher on a parent's day and provide feedback about the proposed methods. The questionnaires were reviewed by this young person and their parent, who fed back that they did not anticipate any problems or difficulties for participants in completing the proposed measures. The shop for the prize draw vouchers was agreed with these service users.

2.8 Dissemination

Plans are underway for the researcher to return to the PRUs and the SEN school to disseminate the findings of this research project.

3. Results

3.1 Data screening

It became apparent during the study data collection stage that recruiting sufficient numbers of parents to take part was unlikely due to difficulties both in terms of meeting parents in order to obtain their consent to be contacted, and in successfully contacting a number of those who did initially consent. Only five sets of parent data were successfully obtained and so parent data were not included in any statistical analysis.

Following entry of the available data into SPSS, all variables were screened for incorrectly entered data and outliers. Descriptive statistics including skewness and kurtosis were inspected to identify whether variables were normally distributed or not. Table 1 provides completion rates for the (self- and informant-report Disruptive Behaviour Rating Scales (DBRS), the Child and Adolescent Intellectual Disability Screening Questionnaire (CAIDS-Q), and the General Health Questionnaire (GHQ), the mean scores and standard deviations of each for the overall sample, and indicates whether the distribution of scores for each measure fell within normal limits.

Table 1.

Completion rates, mean scores and standard deviations on each measure for the overall sample, and whether the variable skewness and kurtosis fell within normal limits.

	Measure	N	Mean (Standard deviation)	Within normal limits?
Self-report measures	DBRS – ADHD total	52	21.94 (11.7)	Yes
	DBRS – ODD total	49	10.78 (6.21)	Yes
	DBRS – CD total	46	3.17 (2.96)	No
	DBRS – Impairment total	42	6.00 (4.64)	Yes
	CAIDS-Q Percentage	47	71.89 (17.42)	No
	GHQ – A (Somatic)	46	4.37 (3.62)	No
	GHQ – B (Anxiety)	46	4.09 (4.72)	No
	GHQ – C (Social dysfunction)	45	6.69 (2.55)	No
	GHQ – D (Depression)	32	2.13 (3.87)	No
	GHQ – Total (Likert scoring)	32	16.00 (11.87)	No
Teacher- report measures	DBRS – ADHD total	50	25.90 (15.41)	Yes
	DBRS – ODD total	48	12.69 (8.30)	No
	DBRS – CD total	50	1.76 (2.29)	No
	DBRS – Impairment total	46	9.47 (6.26)	Yes

With regard to missing self-report data, the most common reason for this was that participants did not wish to complete all of the measures. The completion

rates for the self-report measures broadly reflects the order in which they were completed, such that all individuals completed the DBRS ADHD screen, the first measure in the pack, and fewer completed the GHQ, the last measure to be completed. In cases where participants wished to stop completing the questionnaires, all participants agreed to the researcher keeping the measures that had already been completed and including these for analysis. There are substantially fewer completed GHQ Section D forms because it had been agreed with staff at the Special Educational Needs school that participants recruited there would not complete these items due to concerns about their increased vulnerability and completion of items relating to thoughts of self-harm and suicide.

For the teacher measures, 50 screens were completed for ADHD and CD. Teacher-report screens were not completed for two young people because it was not clear to the teacher which child, based on first name only, they were being asked to rate. With regard to ODD, further missing screens were left blank as the member of staff felt they did not have enough knowledge of the child's history to comment on these symptoms.

3.2 Data analysis

In order to identify those screening positive for ADHD, the following scoring thresholds were used, as per the DBRS manual (Barkley & Murphy, 2006): six or more of the items tapping symptoms of hyperactivity/impulsivity rated as 'Often' or 'Very often' was taken to indicate ADHD of hyperactive subtype; six

or more of the items tapping symptoms of inattention rated as 'Often' or 'Very often' was taken to indicate ADHD of inattentive subtype; and six or more items rated as 'Often' or 'Very often' on both subscales was taken to indicate ADHD of combined subtype.

In terms of identifying those with and without ADHD, self-report and teacher-report versions of the DBRS remained once parent-report data were excluded. There was some agreement between the young people and their teachers in terms of positive and negative screens for ADHD on the DBRS. Table 2 shows a cross-tabulation of the screening figures, with the results of the self-report and teacher-report screens matching in 32 cases (64%). A previous study of 54 adolescent boys aged 12 to 17 years (mean age = 14.59, standard deviation = 1.16) in a secure residential unit concluded that teachers, as informants rating ADHD symptoms, provided screens that were most often in line with the results of full diagnostic interviews completed by psychiatrists (Young et al., 2010). Therefore, the DBRS teacher ratings were used to indicate presence or absence of ADHD, CD, and ODD.

Table 2.

Cross-tabulation of DBRS screening results for ADHD as reported by young people and teachers.

		Teacher-report ADHD screen		
		Positive	Negative	<i>Total</i>
Self-report ADHD screen	Positive	11	7	18
	Negative	11	21	32
	<i>Total</i>	22	28	50

There was no significant difference in age between those with ADHD (mean = 13.23 years, standard deviation = 1.34) and those without (mean = 13.46 years, standard deviation = 1.17). When data were inspected separately for the two groups (ADHD and non-ADHD), there appeared to be outliers within some of the other variables. For example, inspection of skewness and kurtosis for the teacher-rated CD total score indicated that this variable was not normally distributed, and a box-plot of the total scores in this variable indicated significant outliers, with three individuals in the non-ADHD group scoring particularly highly on the DBRS CD screen (see Figure 2). However, it was decided that, because it is clinically possible to score highly for CD without having ADHD, such outliers would not be amended or removed from the data. Instead, non-parametric analysis would be conducted for any variables that did not have a normal distribution.

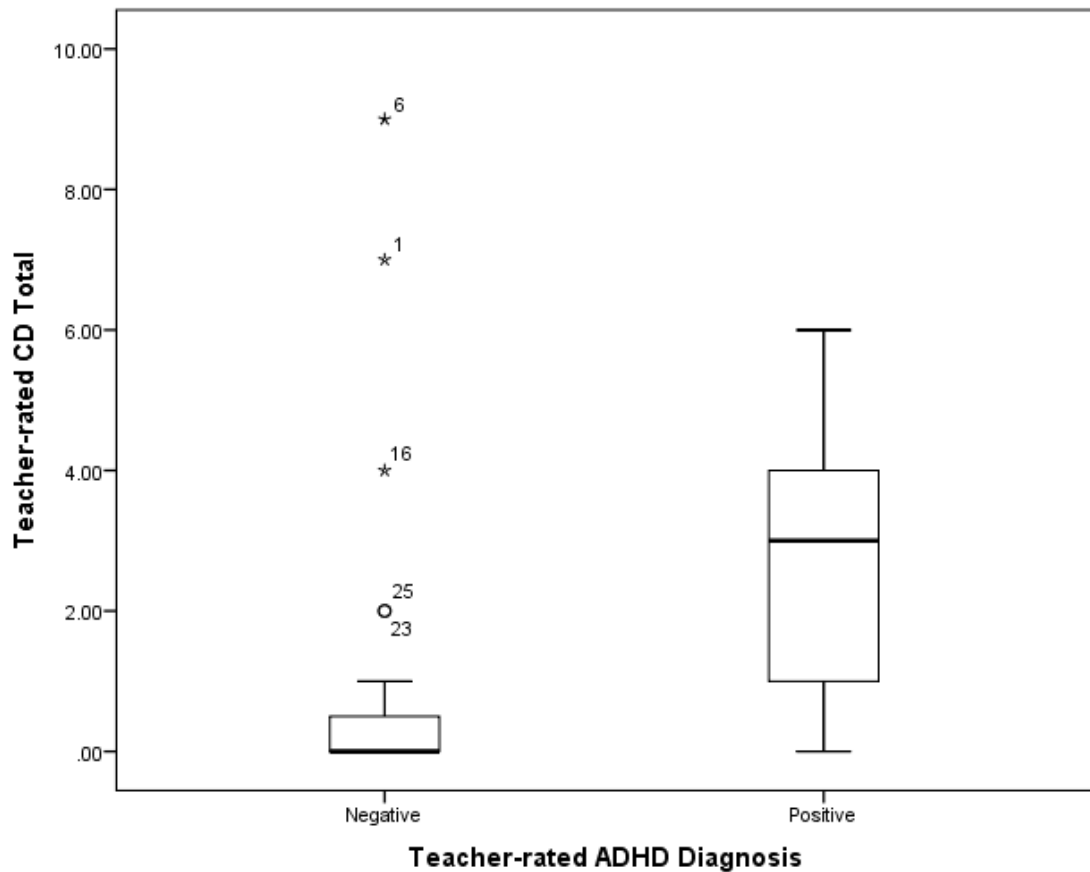


Figure 2. A box-plot of the CD total scores on the teacher-rated DBRS by ADHD diagnostic group.

3.3 The psychological and behavioural needs of young people accessing alternative education provision

In order to investigate whether those with ADHD were more likely to also be those with positive screens for co-morbid diagnoses, chi square analyses were completed. Where categorical information was not available, for example on the GHQ subscales, Mann Whitney U tests were carried out to investigate any differences in the total scores, as continuous variables, between those with and without ADHD.

3.3.1 Attention Deficit Hyperactivity Disorder

Of the fifty teacher-report questionnaires for ADHD that were returned completed, 22 (44%) indicated a positive diagnosis. Of these, six (27%) were of the Inattentive subtype and 16 (73%) were of the Combined subtype. There were no teacher-report screens indicating ADHD of Hyperactive/impulsive subtype. Table 3 summarises the results of the screening questionnaires for ADHD, CD, and Learning Disability (LD).

Information obtained from record reviews indicated that one young person had a previous confirmed diagnosis of ADHD. This young person screened positive for ADHD on the teacher-report DBRS. Records of four other individuals indicated that they had been assessed for ADHD but no diagnosis had resulted. Of these four, two screened positive for ADHD on the teacher-rated DBRS. One further individual had a documented diagnosis in their record of 'Hyperkinetic disorder/Oppositional Defiant Disorder' but this person did not screen positive for ADHD on the teacher-report DBRS.

3.3.2 Conduct Disorder

In order to identify those screening positive for CD, the following scoring threshold was used, as described in the DBRS manual (Barkley & Murphy, 2006): three or more of the items endorsed was taken to indicate presence of CD. Of the 50 teacher-report DBRS CD screens, 15 (30%) were positive and 35 (70%) were negative (see Table 3). One young person had a previous

diagnosis of CD documented in their record, and they screened positive for CD on the teacher-report DBRS.

3.3.3. Oppositional Defiant Disorder

In order to identify those screening positive for ODD, the following scoring threshold was used, as described in the DBRS manual (Barkley & Murphy, 2006): four or more of the items rated as '2' or '3'. Of the 48 teacher-rated DBRS ODD screens, 26 (54%) were positive and 22 (46%) were negative (see Table 3). The individual with a documented diagnosis of 'Hyperkinetic disorder/ODD' screened negative for ODD on the teacher-report DBRS.

3.3.4 Learning Disability

In order to identify those who were likely to have a LD, the CAIDS-Q percentage score was obtained as per the manual instructions (McKenzie & Paxton, 2012). In total, a CAIDS-Q was completed for 49 young people, of which two forms (4%) were not scoreable (i.e. had more than two items marked 'Don't know'). LD was indicated to be likely for nine individuals (18%), and was not likely, according to the screen, for 38 individuals (78%) (see Table 3).

Record reviews indicated that 12 young people had a documented diagnosis of Mild Learning Disability (MLD) in their records, one of whom had an additional diagnosis of Foetal Alcohol Syndrome. Five of these young people

screened positive for likely LD on the CAIDS-Q. In terms of specific learning problems, the following were documented in records: ‘dyslexia’ (n = 5), ‘sensory processing disorder’ (n = 1), ‘specific receptive language difficulty’ (n = 1), and ‘specific learning difficulty’ (n = 1). None of these diagnoses were comorbid with MLD.

Table 3.

Diagnostic classifications for ADHD and CD from the teacher-report DBRS, and LD from the CAIDS-Q.

	Screening diagnosis	n (%)
ADHD (n = 50)	Negative screen	28 (56%)
	Positive screen	22 (44%)
	<i>Hyperactive/impulsive subtype</i>	0 (0%)
	<i>Combined subtype</i>	6 (27%)
	<i>Inattentive subtype</i>	16 (73%)
Conduct Disorder (n = 50)	Negative screen	35 (70%)
	Positive screen	15 (30%)
Oppositional Defiant Disorder (n = 48)	Negative screen	22 (46%)
	Positive screen	26 (54%)
Learning Disability (n = 49)	Unscoreable form	2 (4%)
	Negative screen	38 (78%)
	Positive screen	9 (18%)

3.3.5 Other psychological symptoms

With regard to the GHQ, the 'Somatic' and 'Anxiety' subscales (Sections A and B) were completed by 46 young people. The 'Social Dysfunction' subscale (Section C) was completed by 45 young people as one did not wish to continue after completing only the front of the GHQ sheet. The 'Depression' subscale (Section D) of the GHQ was not administered to the young people at the SEN school and so was completed by 32 participants in total.

For the overall sample, the highest subscale score on average was on the 'Social dysfunction' subscale and the lowest was on the 'Depression' subscale (see Table 1). A total score was calculated for the 32 young people who completed all sections of the GHQ (see Table 1). Using a cut-off score of 23, seven young people (22%) scored above this threshold indicating presence of psychological distress or likely 'caseness' and 25 (78%) scored below. Of the 14 participants who completed some of the GHQ, a further four scored high enough that they met the threshold for presence of distress even without completing all sections. It is not possible to know whether those who did not reach the cut-off may or may not have done if they had completed all sections of the measure.

Use of the alternative method of scoring, the GHQ/binary method, was explored with a cut-off score of 5 or above to identify individuals who would be psychiatric 'cases' as described previously. This method identified six individuals (18%) as likely cases. Of the 14 participants who completed some

of the GHQ, a further six met this cut-off score even without completing all sections. As above though, it is not possible to know whether those who did not reach the cut-off may or may not have done if they had completed all sections of the measure. Table 4 shows a cross-tabulation of the two scoring methods in terms of whether an individual was considered a 'case' or not.

Table 4.

Cross-tabulation of 'caseness' classifications on the GHQ using the Likert and GHQ/Binary scoring methods.

		GHQ/Binary scoring method (cut-off 5/6)		
		Case	Non-case	<i>Total</i>
Likert scoring method (threshold 23)	Case	6	1	7
	Non-case	0	25	25
	<i>Total</i>	6	26	32

Information obtained from record reviews indicated the following diagnoses among the group: 'Anxiety' (n = 1), 'Attachment disorder' (n = 1), 'Autistic Spectrum Disorder' (n = 4), 'Obsessive Compulsive Disorder' (n = 1), and 'Social/Emotional/Behavioural Disorder' (n = 1). In addition, one individual was documented as having a physical disability and one as having sleep difficulties.

3.3.6 Traumatic brain injury (TBI)

Forty-eight young people completed the screen pertaining to history of TBI. Of these, 15 (31%) indicated that they had experienced 'a blow to the head causing [them] to be knocked out, and/or dazed and confused, for a period of time'. Of these 15, nine (60%) rated the severity of their head injury as 'dazed and confused but no loss of consciousness, minor concussion', three rated severity as 'Loss of consciousness less than 10 minutes, mild traumatic brain injury' (20%), two rated severity as 'Loss of consciousness 10 to 30 minutes, complicated mild traumatic brain injury' (13%), and one rated severity as 'Loss of consciousness for more than 60 minutes, very severe traumatic brain injury' (7%). With regard to the frequency of head injuries reported, 12 of the 15 young people with a history of head injury answered this question, of whom nine reported only having had one incident of head injury, one reported having experienced three head injuries, one reported four head injuries, and one reported five head injuries.

3.3.7 Co-morbidity

Overall, looking at the five possible positive outcomes from the screening questionnaires administered, namely presence of ADHD, CD, and ODD from the DBRS, LD from the CAIDS-Q, and psychiatric 'caseness' from the GHQ, 18 young people did not screen positive on any of the measures, 10 screened positive for one disorder, nine screened positive for two disorders, nine

screened positive for three disorders, and six screened positive for four out of five disorders.

In terms of comorbidity with ADHD specifically, ten (45%) of the 22 young people with ADHD also screened positive for CD, 20 (91%) screened positive for ODD, and five screened positive for LD (23%). There were two unscorable and two LD screens not completed within the ADHD group as well. On the GHQ, 15 individuals in the ADHD group had completed this, of whom four (27%) screened positive for psychiatric 'caseness'. All of the individuals with three or four positive screens and five of those with two positive screens were from the ADHD group. In total, 20 (91%) of those screening positive for ADHD also screened positive on at least one of the other measures.

In order to identify whether those with ADHD were more likely than those without to screen positive for any other disorder, chi square analyses were conducted. Table 5 presents the results of the chi square analyses. The results of the chi square analysis indicated that those with ADHD were significantly more likely to also screen positive for CD. Assumptions were met for the analysis to be interpreted (minimum expected cell count = 6.60). This result remained significant (exact p value = .001) with the application of a Bonferroni correction to account for the four chi square analyses that were conducted, which resulted in a new critical value of $p = .00125$. They were also significantly more likely to screen positive for ODD on the teacher-rated DBRS. Assumptions were met for the analysis to be interpreted (minimum

expected cell count = 10.08) and this also remained significant with the application of a Bonferroni correction.

Table 5.

Differences between those with and without ADHD in presence of co-morbid CD, ODD, LD, and psychiatric 'caseness'.

Co-morbid diagnoses	ADHD		X^2 (df =1)
	<i>Symptomatic n (%)</i>	<i>Non-symptomatic n (%)</i>	
<i>CD</i>	12 (55%)	3 (11%)	11.27**
<i>ODD</i>	20 (91%)	6 (21%)	22.09***
<i>LD</i>	5 (23%)	3 (11%)	2.05
<i>Psychiatric 'caseness'</i>	4 (18%)	3 (11%)	.28

** p < .01 *** p < .001

Chi square analysis indicated that those with ADHD were not significantly more likely to screen positive for LD or psychiatric 'caseness' on the GHQ. However, the low number of positive screens on the GHQ and CAIDS-Q meant that the necessary assumptions of the analysis were not met because the minimum expected cell counts were too low to enable them to be meaningfully interpreted, as shown in Table 6.

Table 6.

Crosstabulation of frequencies of individuals screening positive or negative for ADHD with LD and psychiatric 'caseness' results.

			Learning Disability			Psychiatric 'case'		
			Positive	Negative	Total	Positive	Negative	Total
ADHD	Positive	Count	5	13	18	4	11	15
		Expected	3.4	15.7	18.0	3.4	11.6	15.0
	Negative	Count	3	24	27	3	13	16
		Expected	4.6	21.3	27.0	3.6	12.4	16.0
	Total	Count	8	37	45	7	24	31
		Expected	8.0	37.0	45.0	7.0	24.0	31.0

Minimum expected cell count below 5

With regard to Traumatic Brain Injury (TBI), chi square analysis indicated that those who with ADHD were not significantly more likely to report a history of TBI than those without ADHD, $X^2 (1) = .02, p = .89$. The assumption necessary for the chi square analysis to be interpreted was met (minimum expected cell count = 5.78).

In light of the low frequency of positive screens obtained using the cut-off criteria on the CAIDS-Q and GHQ, further post-hoc analyses were conducted using the total scores from the screening measures (percentage score for the CAIDS-Q) as continuous variables. In order to investigate differences between those with and without ADHD, non-parametric Mann Whitney U tests were conducted using ADHD diagnostic status as the independent variable and total score on the other screening measures (percentage score on the CAIDS-Q) as the dependent variables. The results of this analysis are presented in Table 7.

Table 7.

Differences between those with and without ADHD on the teacher-rated DBRS for CD and ODD, on the CAIDS-Q for LD, and on the GHQ scales.

Other measures	ADHD Mean (SD)	No ADHD Mean (SD)	Mann Whitney U	Effect size r
DBRS – CD total	2.81 (1.97)	.93 (2.21)	107.50***	-.59
DBRS – ODD total	18.68 (5.42)	7.62 (6.82)	70.00***	-.65
CAIDS-Q % score	70.10 (17.63)	74.26 (16.29)	212.50	-.11
GHQ – Somatic	5.22 (3.93)	3.81 (3.38)	162.50	-.25
GHQ – Anxiety	4.61 (5.70)	3.96 (4.13)	227.00	-.02
GHQ – Social dysfunction	7.67 (3.41)	6.08 (1.55)	150.50	-.29
GHQ – Depression	2.33 (4.70)	1.94 (3.19)	113.00	-.06
GHQ total (Likert scoring)	18.27 (14.66)	13.94 (9.01)	93.50	-.19

*** p < .001

Mann Whitney U analysis indicated that there was a significant difference between those with and without ADHD in the total score obtained for CD such that those with ADHD had significantly greater CD symptomatology (median = 3.00) than those without ADHD (median = 0.00). This result remained significant after applying a Bonferroni correction to account for the eight analyses that were conducted, which gave a new critical value of $p = .00625$. The Mann Whitney analysis also indicated a significant difference between those with and without ADHD in the total score obtained for ODD such that those with ADHD had significantly greater ODD symptomatology (median = 20.50) than those without ADHD (median = 6.00). This result also remained significant after applying a Bonferroni correction, and both results indicated large effect sizes (Cohen, 1992). Those with or without ADHD did not differ significantly in their percentage score for LD, somatic symptoms, symptoms of anxiety, social dysfunction, or depression, or in their overall distress score on the GHQ, although results approached significance for somatic symptoms ($p = .09$) and social dysfunction ($p = .06$) with those with ADHD scoring more highly on both of these subscales indicating a trend towards greater levels of such symptoms among those with ADHD.

Finally, post-hoc correlation analysis was conducted to explore associations between the symptoms of all the included diagnoses using the total scores on the measures as continuous variables. Several variables were not normally distributed (see Table 1), therefore non-parametric (two-tailed) Spearman's rank correlations were conducted (see Table 8).

Table 8.

Spearman's rank correlations between the DBRS total scores for ADHD and CD, the CAIDS-Q percentage score, and the GHQ subscale scores.

	Teacher DBRS CD	Teacher DBRS ODD	Teacher DBRS Impairment	CAIDS-Q % score	GHQ A Somatic	GHQ B Anxiety	GHQ C Social dysfunction	GHQ D Depression	GHQ Total (Likert scoring)
Teacher DBRS ADHD	.67**	.79**	.87**	-.06	.30*	.07	.42**	.10	.35
Teacher DBRS CD	1.00	.85**	.70**	-.13	.12	.03	.30*	-.18	.05
Teacher DBRS ODD		1.00	.86**	.01	.19	.02	.40**	-.01	.29
Teacher DBRS Impairment			1.00	.03	.36*	.16	.46**	.26	.53**

* p < .05 (two-tailed)

** p < .001 (two-tailed)

Table 8 continued

	Teacher DBRS CD	Teacher DBRS ODD	Teacher DBRS Impairment	CAIDS- Q % score	GHQ A Somatic	GHQ B Anxiety	GHQ C Social dysfunction	GHQ D Depression	GHQ Total (Likert scoring)
CAIDS-Q % score				1.00	-.01	-.05	-.12	.04	.01
GHQ A Somatic					1.00	.72**	.20	.63**	.79**
GHQ B Anxiety						1.00	.25	.59**	.79**
GHQ C Social dysfunction							1.00	.36*	.49**
GHQ D Depression								1.00	.81**

* p < .05 (two-tailed)

** p < .001 (two-tailed)

A significant positive correlation was found between the DBRS ADHD and CD total scores and between the DBRS ADHD and ODD scores, indicating that those with greater ADHD symptomatology also had more symptoms of CD, $r = .67$, $p < .001$, and ODD, $r = .79$, $p < .001$. Both of these correlations remained significant when a Bonferroni correction was applied to account for the multiple correlations conducted, which gave a new critical value of $p = .006$. Using correlation coefficients of .10, .30, and .50 to indicate small, medium, and large effect sizes, respectively (Cohen, 1992), both correlations represent large effect sizes.

With regard to psychological symptoms, a significant positive correlation was found between DBRS ADHD total score and the Somatic subscore on the GHQ (subscale A) and between the DBRS ADHD and the Social dysfunction subscore (subscale C), indicating that those with greater ADHD symptomatology also had more somatic symptoms and more symptoms of social dysfunction (both medium effect size). However, only the correlation with the social dysfunction subscale remained significant when a Bonferroni correction was applied.

Levels of impairment as measured by the DBRS correlated significantly with ADHD, ODD, and CD symptoms (all large effect size) indicating that those with greater levels of symptoms on these three screens experienced greater levels of impairment. Impairment was also significantly positively correlated with somatic symptoms, social dysfunction (both small effect size), and overall psychiatric distress (medium effect size) on the GHQ, indicating that those

reporting greater somatic and social difficulties were also experiencing greater impairment.

The correlation analysis indicated that there was no significant association between ADHD symptomatology (as measured by total score on the teacher-rated DBRS) and severity of head injury ($r = .13$, $p = .38$), number of head injuries reported ($r = .19$, $p = .58$), or age at worst injury ($r = .24$, $p = .45$). Non-parametric correlations were conducted because, upon inspection of the skewness and kurtosis, none of the three head injury variables were found to be normally distributed.

Due to the high levels of co-morbid ODD (91%) and CD (45%) in the ADHD group, further exploratory partial correlations were conducted to control for the different symptoms. This analysis indicated that, if the ODD total score was controlled for, the previously significant associations between ADHD and CD, ADHD and Somatic symptoms, and ADHD and Social dysfunction symptoms, and all significant correlations with impairment, became non-significant. The same was true when controlling for CD, with all significant correlations with ADHD becoming non-significant. In order to explore the relationship between ODD or CD and the other variables, partial correlations were run again, this time controlling for the effect of the ADHD score. Results indicated that there were no significant associations between ODD or CD and any of the other variables.

3.4 Current levels of impairment

3.4.1 Overall impairment

A teacher-report impairment scale total score on the DBRS was available for 46 young people. This variable was normally distributed upon inspection of skewness and kurtosis and so an independent groups t-test was used to investigate differences in overall impairment between those with and those without ADHD. Levene's test indicated equal variance between the two groups ($F = .06$, $p = .81$). Results of the t-test indicated that, on average, those with ADHD experienced significantly greater levels of overall impairment (mean = 14.14, standard error = .96) than those without ADHD (mean = 5.21, standard error = .87), $t(44) = -6.89$, $p < .001$. According to Cohen (1992) this difference represented a medium to large effect size, $r = 0.71$.

3.4.2 Disruptive behaviour

Information about disruptive behaviour was available for 46 individuals who consented to record reviews, and any incidents that had occurred during the two weeks preceding the data collection were recorded in order to provide a picture of current levels of disruptive behaviour. In total, there were 13 documented incidents of 'verbal outburst', 14 incidents of 'physical aggression', two incidents of 'damage to property', one incident of 'self-injurious' behaviour, four incidents of 'fire-setting', one 'substance related' incident, and 29 incidents of 'other disruptive behaviour'. The 'other' category

included setting up fights (n = 1), pulling books off of the shelves (n = 1), snatching/throwing staff keys (n = 3), leaving the site without permission (n = 1), blocking staff cars (n = 3), climbing/running on the roof of the building (n = 4), smoking on-site (n = 5), sitting on staff cars (n = 1), using mobile telephone in lessons (n = 1), refusing to engage with the lesson (n = 2), throwing/flicking paper (n = 2), taking equipment (n = 1), and unspecified disruptive behaviour (n = 4).

Assumptions of normality were not met with regard to the data for the total number of incidents per person, as this variable was positively skewed with the majority of participants having no behavioural incidents recorded during the two weeks prior to completing their questionnaires. In order to investigate whether there was a significant difference in incidents between those screening positive or negative for ADHD in terms of these incidents, a non-parametric Mann Whitney U test was therefore conducted. The results indicated a significant difference between those with and those without ADHD, such that those with ADHD (n = 21) were responsible for significantly more incidents of disruptive behaviour (median = 1.00) than those without ADHD (n = 24; median = 0), $U = 138.0$, $p < .01$, $r = -.44$. With the exception of a single incident within the category of 'Other disruptive behaviour' for which one of the SEN school participants was responsible, all recorded incidents were carried out by those from the PRUs.

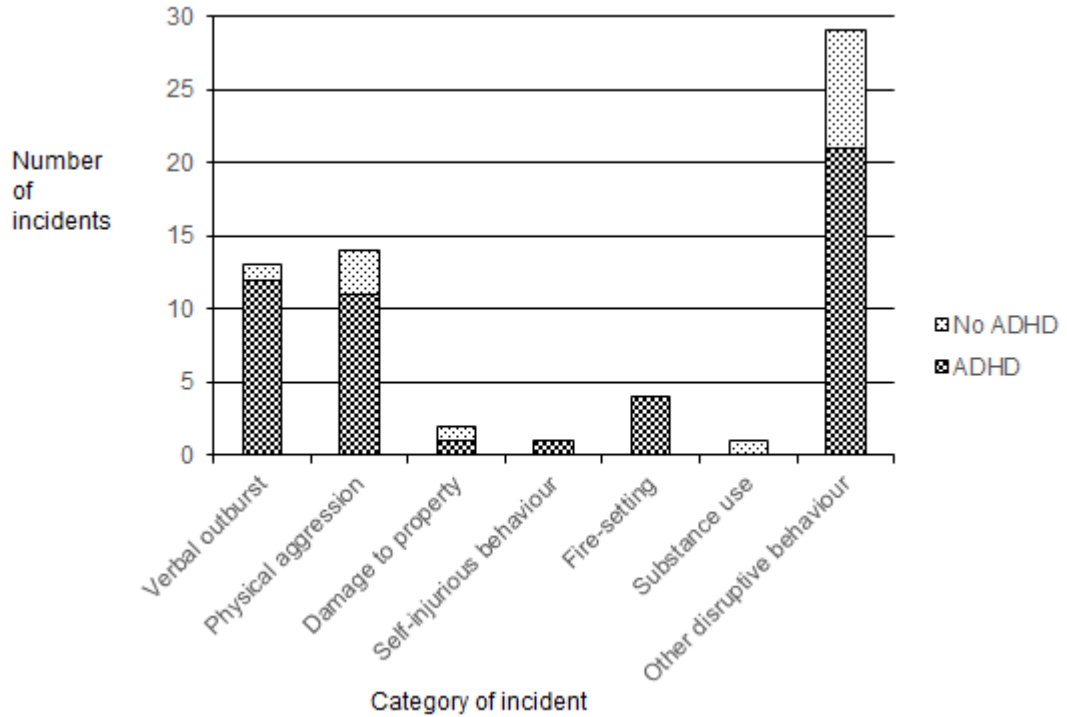


Figure 3. Bar chart of critical incident types for those with and without ADHD.

With regard to severity of physical aggression, where an individual had more than one incident of physical aggression, the most severe incident was coded for severity. This resulted in two incidents that were coded as ‘threat of violence only’ and six that were coded as ‘violence is inflicted but no injury is detected on examination and no significant pain’. Because numbers were very small, it was not possible to conduct additional statistical analysis. However, inspection of the frequencies indicated that both incidents of threat and five of the six in which actual violence occurred were found within the group screening positive for ADHD.

3.4.3 Academic impairment

Teachers were asked to provide a subjective rating of the young people's level of academic functioning compared with what might be expected of their peers in mainstream education. This information was provided for 42 young people, of whom 13 (31%) were rated as 'Significantly below average', 13 (31%) were rated as 'Below average', 11 (26%) were rated as 'Average', and five (12%) were rated as 'Above average'. None of the young people were rated as 'Significantly above average'.

Chi square analysis was conducted to investigate whether those ADHD were reported to have greater levels of academic impairment compared to those without. Results indicated that those with ADHD were not significantly more likely to be given any particular rating than those without ADHD, $X^2(3) = 5.74$, $p = .13$. However, the necessary assumption of the chi square analysis was not met as minimum cell counts were too low (see Table 9).

Table 9.

Crosstabulation of frequencies of individuals screening positive or negative for ADHD and their teacher-ratings of academic impairment.

			Academic performance rating				
			Significantly below average	Below average	Average	Above average	<i>Total</i>
ADHD	Positive	Count	8	5	5	0	18
		Expected	5.6	5.6	4.7	2.1	18.0
	Negative	Count	5	8	6	5	24
		Expected	7.4	7.4	6.3	2.9	24.0
	<i>Total</i>	<i>Count</i>	13	13	11	5	42
		<i>Expected</i>	13.0	13.0	11.0	5.0	42.0

Minimum expected cell count below 5

Condensing the performance ratings into two categories of 'Below average' (including ratings of 'Significantly below average' and 'Below average') and 'Average and above' (including ratings of 'Average' and 'Above average') improved the expected cell count (new minimum expected count = 6.86) but results of the chi square analysis remained non-significant, $X^2(1) = 1.42$, $p = .23$ indicating that there was no significant difference in academic performance rating for those with or without ADHD.

3.5 Common reasons for attending alternative educational provision

Information about reasons for attending alternative education was obtained for 49 young people. For the 15 participants attending the school for those with special educational needs the information was provided by the Deputy head teacher as access to the school files was not granted to the researcher. The following seven reasons were given in records for attendance at an alternative educational provision (see Figure 4):

- 'Stated social, emotional, behavioural difficulty' (n = 17, 35%)
- 'Level of (Special Educational) need' (n = 16, 33%)
- 'Permanently excluded from mainstream education' (n = 9, 18%)
- 'Timed intervention' (n = 4, 8%)
- 'Receiving a mixed education' (n = 1, 2%)
- 'Refused other placement' (n = 1, 2%)
- 'Parental choice' (n = 1, 2%).

The 16 young people who were reported to be accessing alternative provision due to having an increased level of special educational need were all attending the SEN school. All other individuals were accessing alternative educational provision through one of the participating PRUs.

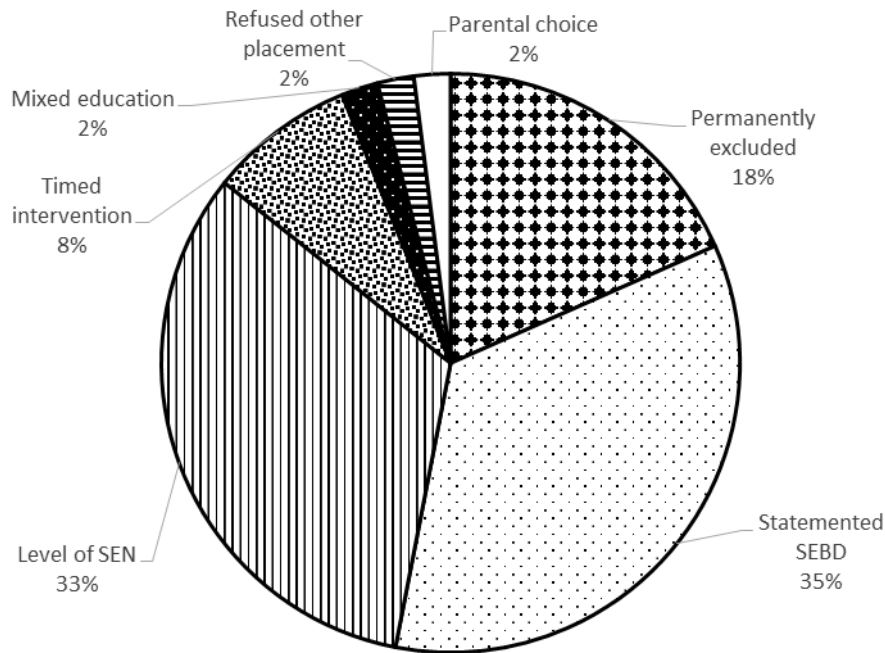


Figure 4. Pie chart of primary reasons for attending the alternative education setting.

With regard to the data presented above, it is necessary to explain that just because a participant did not have ‘Permanently excluded from mainstream education’ as their main recorded reason for accessing alternative provision, this did not necessarily mean that they had not been permanently excluded. Two individuals who had ‘Statemented social, emotional, behavioural difficulty’ as their primary reason for accessing alternative provision also had documentation in their files indicating that they had also been permanently excluded from mainstream education. As these categories were not mutually

exclusive, a separate variable was created in the data in which participants were recorded as permanently excluded or not and a chi square analysis was conducted using this additional variable in order to identify whether those with ADHD were more likely to have been permanently excluded from mainstream education than those without ADHD.

Thirty participants were included in this analysis, for whom specific data regarding permanent exclusion was available (for the remaining individuals, it was unclear from records whether they had been permanently excluded or not, and staff were not able to provide further information about permanent exclusion history). The necessary assumption for analysing the chi square results was met, with all expected cell counts greater than five. The chi square analysis indicated that those with ADHD were not significantly more likely to have been permanently excluded from mainstream education than those without ADHD, although there was a trend toward this being the case, $X^2(1) = 3.59$, $p = .058$.

3.6 Provisions made within the mainstream education setting

Record reviews indicated that 30 young people had been set up with an Individual Education Plan. Twelve young people were documented as having been on School Action Plus, of whom seven had screened positive for ADHD. In terms of specific support they had received prior to attending alternative education, ten individuals from the overall sample had no details of any support they may have received in their files; 14 had received non-therapeutic

one-to-one support (28%), including teaching assistant support (n = 7), mentoring (n = 6), unspecified one-to-one support (n = 16), or a tutor (n = 1), and seven had received a behavioural intervention or management plan of some kind (14%), including being provided with a report card (n = 5), using a Time-Out card (n = 1), having a reward scheme in place (n = 1), having unspecified behavioural support or a behavioural management plan (n = 2). Specific educational interventions were provided for six young people (12%), including support with literacy (n = 4), maths (n = 1), small group interventions (n = 7), or unspecified remedial support (n = 2). Four individuals were documented to be on a reduced timetable. Percentages given do not total 100% as some individuals received more than one category of support or more than one kind of support within a category.

In terms of non-educational needs, therapeutic interventions had been provided to nine young people (18%), some of whom were receiving more than one intervention. Interventions included speech and language support (n = 6), counselling (n = 2), anger management (n = 2), self-esteem work (n = 1), or pastoral support (n = 1), support from a youth offending organisation (n = 2), and one young person had a nurse for assistance related to their physical health condition.

Chi square analysis was conducted to investigate whether those with ADHD were more likely than those without to have received non-therapeutic one-to-one support, a behavioural intervention, a therapeutic intervention, or a specific educational intervention while in their mainstream education. Results

indicated that those with ADHD were significantly more likely to have received one-to-one (non-therapeutic) support of some kind prior to accessing alternative education provision, $\chi^2(1) = 15.51$, $p < .001$. This result remained significant after applying a Bonferroni correction to account for the four chi square analyses conducted, which gave a new critical value of $p = .0125$. Individuals with ADHD were not significantly more likely to have received a behavioural, $\chi^2(1) = .42$, $p = .52$, therapeutic, $\chi^2(1) = 1.94$, $p = .16$, or specific educational intervention, $\chi^2(1) = .05$, $p = .83$, than those without ADHD. However, the assumption of the minimum required cell count for this analysis was not met for these variables (see Table 10). Spearman correlation analysis indicated that there was no significant relationship between ADHD total score and the number of different types of provision that had been in place in the mainstream setting.

Table 10.

Crosstabulation of frequencies of individuals screening positive or negative for ADHD and the categories of support provided in mainstream education.

			Behavioural intervention			Therapeutic intervention			Educational intervention		
			Yes	No	<i>Total</i>	Yes	No	<i>Total</i>	Yes	No	<i>Total</i>
ADHD	Positive	Count	4	18	22	6	16	22	3	19	22
		Expected count	3.2	18.8	22.0	4.1	17.9	22.0	2.8	19.3	22.0
	Negative	Count	3	23	26	3	23	26	3	23	26
		Expected count	3.8	22.2	26.0	4.9	21.1	26.0	3.3	22.8	26.0
	<i>Total</i>	<i>Count</i>	7	41	48	9	39	48	6	42	48
		<i>Expected count</i>	7.0	41.0	48.0	9.0	39.0	48.0	6.0	42.0	48.0

Minimum expected cell count below 5

Thirty-two young people had evidence of a Statement of SEN in their file. Thirty-five young people had documented evidence of receiving a cognitive assessment by an educational psychologist. This number included 15 (all) individuals attending the SEN school and 20 young people from the PRUs. Statistical analysis was not conducted using these variables because, unfortunately, it was not possible to ascertain whether lack of paperwork in a young person's file could be accurately assumed to mean they had no Statement and no cognitive assessment.

3.7 Provisions made in the alternative education setting

With regard to the type of alternative provision being accessed (i.e. PRU or SEN school), chi square analysis indicated that those with ADHD were not significantly more likely to be attending a PRU (mean DBRS ADHD score = 28.06) than a SEN school (mean DBRS ADHD score = 20.36), $\chi^2 (1) = 1.88$, $p = .17$. Post hoc analysis indicated that those with CD were significantly more likely to be attending a PRU (mean DBRS CD score = 2.14) than a SEN school (mean DBRS CD score = .79), $\chi^2 (1) = 4.84$, $p < .05$, but the assumption of the chi square analysis was not met with regard to the minimum expected cell count (see Table 11).

Table 11. Crosstabulation of frequencies of individuals screening positive or negative for CD and the type of alternative provision they were accessing.

			Alternative provision		
			PRU	SEN school	Total
CD	Positive	Count	14	1	15
		Expected	10.8	4.2	15.0
	Negative	Count	22	13	35
		Expected	25.2	9.8	35.0
	Total	Count	36	14	50
		Expected	36.0	14.0	50.0

Minimum expected cell count below 5

By the very fact that these young people were accessing alternative education provision at a PRU or SEN school, they all were being taught in smaller classes than those in mainstream settings. However, 12 participants were documented as receiving further small-group support. Using the same categories of provision that were used to categorise the mainstream support, the following provisions were reported in the alternative education settings: 20 young people were receiving some kind of non-therapeutic one-to-one support (40%), including teaching assistant support (n = 14), mentoring (n = 4), and other unspecified one-to-one support (n = 5). Therapeutic interventions were being provided for 12 young people (24%), some of whom were receiving more than one intervention, including speech and language support (n = 7), including drama therapy (n = 3), Multisystemic Therapy (n = 3), counselling (n

= 2), psychotherapy (n = 1), Occupational Therapy (n = 1), and anger management (n = 1). Behavioural interventions were being provided for seven young people (14%), and specific educational interventions were being provided for five young people (10%), including regular breaks in study time (n = 2), visual aids to learning (n = 2), literacy support (n = 1), or a personalised curriculum (n = 2).

Chi square analysis was conducted to investigate whether those with ADHD were more likely than those without to be receiving non-therapeutic one-to-one support at school, a behavioural intervention, a therapeutic intervention, or a specific educational intervention. Results of the chi square indicated that those with ADHD were not significantly more likely than those without to be in receipt of any category of intervention; one-to-one support, $\chi^2(1) = .18$, $p = .68$, therapeutic intervention, $\chi^2(1) = 1.01$, $p = .32$, behavioural intervention, $\chi^2(1) = 2.16$, $p = .14$, or a specific educational intervention, $\chi^2(1) = .45$, $p = .50$. However, the assumption of minimum expected cell count was only met for the one-to-one support, and therapeutic intervention variables. For the other two intervention variables, the minimum expected cell counts were below five (see Table 12).

Table 12.

Crosstabulation of frequencies of individuals screening positive or negative for ADHD and the categories of support provided in alternative education.

			Behavioural intervention			Educational intervention		
			Yes	No	<i>Total</i>	Yes	No	<i>Total</i>
ADHD	Positive	Count	5	17	22	3	19	22
		Expected count	3.2	18.8	22.0	2.3	19.7	22.0
	Negative	Count	2	24	26	2	24	26
		Expected count	3.8	22.2	26.0	2.7	23.3	26.0
	<i>Total</i>	<i>Count</i>	7	41	48	5	43	48
		<i>Expected count</i>	7.0	41.0	48.0	5.0	43.0	48.0

Minimum expected cell count below 5

Spearman correlation analysis indicated that there was no significant relationship between ADHD total score and the number of different types of provision that were in place.

Of the therapeutic interventions described previously, it is likely that at least some of these were being provided by agencies outside of the educational establishment. Record reviews indicated that 15 of the young people had been, or were currently, involved with Child and Adolescent Mental Health services (CAMHS). Chi square analysis was conducted to investigate whether those with ADHD were more likely than those without to have been referred to CAMHS. Results indicated that those with ADHD were not significantly more likely than those without to be involved with CAMHS, $\chi^2(1) = .33$, $p = .57$. The assumption of minimum expected cell count was met.

4. Discussion

The aims of this study were to investigate the psychological and behavioural needs of young people attending four alternative education establishments in the United Kingdom (UK). The support provided to these young people and the extent to which it seemed to be targeted towards those with different needs was explored. A sample of 52 young people and their teachers participated in the study and completed screening measures rating symptoms of Attention Deficit Hyperactivity Disorder (ADHD), Conduct Disorder (CD), Oppositional Defiant Disorder (ODD), Learning Disability (LD), and psychological distress or 'caseness' (i.e. somatic symptoms, anxiety, social dysfunction, and depression), as well as history of traumatic brain injury (TBI). Measures of overall impairment, academic impairment, and disruptive behaviour were also collected, along with information from school files about the reasons for attending alternative education and various support strategies and interventions that had been provided to the young people.

4.1 The psychological and behavioural needs of young people accessing alternative education provision

The prevalence rate of ADHD was hypothesised to be considerably higher in this group of young people in alternative education settings than that found in the general population. The results of diagnostic screening were in line with this expectation, with 44% of young people screening positive for ADHD on the teacher-report measure, a rate approximately six to nine times greater than

that found in the general population (Willcutt, 2012). The 44% rate of ADHD reported was somewhat lower than that previously reported in a UK school for those with emotional and behavioural difficulties by Place et al. (2000) who found that over two-thirds of young people met criteria for ADHD. The difference may be explained in part by differences in methodology, as Place et al. (2000) used an alternative teacher-rated screening questionnaire combined with a clinical evaluation of the child obtained by interviewing parents to give a diagnostic profile for the young people. Their sample also comprised a younger age group of children and it may be that symptoms of ADHD in this adolescent sample (secondary school age) had remitted to a degree. The fact that none of the positive ADHD screens in the study were classified as ADHD of hyperactive type may also be due to the fact that hyperactive symptoms remit to a greater extent than symptoms of inattention (Faraone et al., 2006). Nonetheless, rates remained considerably higher than the 5 to 7% reported in the general population (Willcutt, 2012), suggesting that this is a particular difficulty for young people that are educated in non-mainstream settings.

It was further expected that there would be high rates of co-morbid difficulties among the young people who screened positive for ADHD. In total, just under half of participants screened positive on two or more of the screens, supporting this hypothesis. With regard to co-morbid externalising symptoms there were particularly high rates of co-morbidity, with 91% of participants with ADHD also meeting criteria for ODD, and 55% meeting criteria for CD, and there were significant correlations between scores on these screens. It is possible that the high rates of comorbidity are partly explained by the screens

measuring similar aspects of behaviour. However, the age ranges for which the items for the ODD and CD screens relate are different, with only the CD items including the adolescent years so this is unlikely to be the main reason for the high rates of comorbidity. The rate of comorbidity found in this study was higher than the co-morbidity reported by Maughan et al. (2004). It may be more probable that this sample of children represents a group who may be considered particularly likely to present with such difficulties, compared to the nationally representative sample recruited in the Maughan et al. (2004) study. Furthermore, higher co-morbidity rates have been reported with the Combined subtype of ADHD (Elia et al., 2008), which was the majority classification among young people screening positive for ADHD in the thesis study. High rates of co-morbid ODD suggest that these young people may particularly be struggling with emotional lability. Sobanski et al. (2010) reported that, among those with ADHD, difficulties with emotional instability were related to symptoms of ODD to a greater extent than symptoms of ADHD. Taken together, the high rates of externalising disorders combined with the probable emotional difficulties, suggests that this is a group of young people particularly at risk for negative outcomes such as antisocial and offending behaviour if their symptoms remain undiagnosed and untreated (e.g. Lynam, 1996; Young et al., 2011).

With regard to LD, 23% of those with ADHD were classified as 'likely' to have a LD. This rate is again higher than the 2% rate found for LD in the general population (Emerson & Hatton, 2008). An important observation, however, is that many of the screening scores appeared to be impacted by the items on

the Child and Adolescent Intellectual Disability Screening Questionnaire (CAIDS-Q) relating to reading, writing and telling the time. Although the CAIDS-Q has been reported to correlate highly with measures of general cognitive functioning, the reliance on this measure as the sole indication of intellectual functioning and learning problems is a limitation of the study. It may have been more informative to consider specific learning problems that are common among this group of young people. Dyslexia, for example, has been reported to co-occur with ADHD in around 30% of cases (Mayes, Calhoun, & Crowell, 2000), and might relate more specifically to the difficulties that were flagged up on the CAIDS-Q.

Overall, lower rates of LD and distress on the General Health Questionnaire (GHQ) were reported compared with the externalising symptoms, with individuals with ADHD no more likely than those without to screen positive for LD or psychiatric 'caseness'. However, the significant association between ADHD and somatic symptoms is in line with the finding from a national survey, which reported that 18% of parents of children with hyperkinetic disorders rated their child's general health as 'fair' or 'bad' compared with 7% of parents whose children did not have such a disorder (Green et al., 2004). The association between ADHD and symptoms of social dysfunction arguably also makes theoretical sense in that the social dysfunction items pertained to, for example, feeling satisfied with the way one has carried out a task, feeling capable, and feeling like one has a useful part to play in things. Individuals with ADHD might be expected to rate these items less positively due to the impact of their symptoms on daily functioning (APA, 2013). No significant

differences were found between those with or without ADHD in terms of low mood or anxiety, and no significant association between ADHD symptoms and symptoms of anxiety or depression. It may be important to consider the impact of the measure used to assess these symptoms. The GHQ has been shown to be a useful indicator of such symptoms in young people, but it has been suggested that it lacks sensitivity for longer-standing difficulties. The alternative method of scoring the questionnaire to take account of more chronic symptoms may have indicated different levels of low mood or anxiety among these young people.

Of particular interest was the post-hoc finding that, if either ADHD or ODD symptoms were controlled for, any significant associations between these symptoms and other difficulties were attenuated. This may suggest that, among this group of young people, the co-morbidity is indirect, and possibly something specific about the interaction of different externalising symptoms contributes to the difficulties experienced by these young people. Similar findings have been previously reported, with ODD in particular highlighted as a key intermediary diagnosis (Copeland, Shanahan, Erkanli, Costello, & Angold, 2013). Historically, co-morbid ADHD and CD have been thought to present as clinically more severe variants of their individual disorders, but in this sample that included a pre-adolescent age group, it may be that ADHD and ODD together similarly increase risk of impairment and negative outcomes. If true, this could warrant further targeting of resources to identify and support these young people and highlights the importance of early identification and intervention.

Finally, just under one-third of young people in the study reported a history of traumatic brain injury (TBI). However, TBI was not found to be significantly more likely among those with ADHD, and symptoms of ADHD were not associated with younger age of injury or increased frequency or severity of injury among those who did report TBI. However, the numbers in this analysis were small and may have lacked power to detect an effect, as this finding does not fit with previous research reporting a bi-directional relationship between ADHD and head injury (Keenan et al., 2008; Max et al., 2004).

4.2 Current levels of impairment

It was expected that those screening positive for ADHD would present with greater levels of overall impairment, greater academic impairment, and more frequent and severe disruptive behaviour. This hypothesis was partly supported, in that those with ADHD were significantly more impaired by their symptoms in terms of their overall functioning and were responsible for significantly more incidents of disruptive behaviour than those without ADHD. While it is necessary to consider the high levels of co-morbidity with ODD and CD that may have contributed to the frequency of disruptive behaviours reported for those with ADHD, this finding is supported by previous research (Young et al., 2011). Young et al. (2011) reported that, among adolescent boys in a secure facility, ADHD symptoms predicted incidents of disruptive behaviour of similar categories to those used in this study, over and above symptoms of CD, suggesting that those with ADHD pose a particular challenge for management in institutional settings. It was suggested that those

with untreated ADHD may be vulnerable to such behaviour in confined or physically restrictive environments because the nature of their symptoms means that they are less able to cope with associated pressures such as limited and planned activity and interpersonal difficulties that may arise (Skirrow, McLoughlin, Kuntsi, & Asherson, 2009; Young et al., 2011). While the thesis study did not include a sample of young offenders, this is relevant to young people attending PRUs where, unlike mainstream schools, high fences surround the grounds, doors are typically locked, and staff hold the keys. However, Young et al. (2011) further reported that there are important contextual factors to consider with regard to apparent relationships between symptoms and behaviour, as ADHD among their sample did not predict delinquency outside the secure facility. This is of relevance to professionals who may be required to assess for ADHD, as symptoms must be pervasive across settings in order for a clinical diagnosis to be made. The current findings seem to suggest that ADHD may have a similar impact on the behaviour of young people in certain education settings to forensic settings, which indicates an important target for treatment. Nonetheless, it remains clinically important to understand the differential impact of ADHD-like symptoms in different settings and to explore how best to minimise the impairment.

The expectation of greater impairment among those with ADHD did not extend to academic impairment in this study, as symptomatic individuals were not significantly more likely to be rated by teachers as 'below average' in terms of their academic functioning. It is possible that the sample represented a group

of young people who were generally struggling in education, regardless of their ADHD status in this study. However, this would not fit with the fact that several individuals in this study were rated by teachers as 'Average or above'. It would be important to consider the possible impact of co-morbid symptoms and specific learning problems in this regard, and it may also be the case that a more objective measure of academic achievement would highlight educational impairment more effectively. Key stage attainment, for example, would have been a useful indicator of academic achievement that could have been compared to national standards, had it been available more consistently across the sample.

4.3 Common reasons for attending alternative educational provision

It was expected that those screening positive for ADHD would be more likely to have a behavioural reason for attending alternative provision. Results indicated that there was a trend towards those with ADHD being more likely than those without to have been permanently excluded from their mainstream school, providing some support for this hypothesis, although this result fell just short of statistical significance. It may be that the small sample size impacted on the power of this analysis. A further consideration is that, unfortunately, it was not consistently clear from the records whether or not the reason for attending alternative provision was the same as the reason for exclusion from the mainstream setting. As mentioned, the different categories of reason for attending the alternative provision were not necessarily mutually exclusive. For example, 17 of the young people attending PRUs were recorded as attending

the unit because attending a special provision for those with social, emotional, or behavioural difficulties had been a requirement noted in their Statement. However, two of the individuals documented as attending alternative provision due to permanent exclusion from a mainstream school setting also had a Statement, and there was little information available about why a young person had previously been excluded. Overall, 35% of the young people were in alternative provision due to having a Statemented social, emotional, or behavioural difficulty, but this was not likely to have been the specific reason for their exclusion. Nevertheless, given that those with ADHD were significantly more disruptive in the alternative education setting, it could be argued that this was likely to have been the case in their mainstream setting as well. This would support figures reported in a previous review by O'Regan (2010) indicating that almost half of the fixed-term exclusions made from primary, secondary and special educational needs schools in England in 2007/2008 were due to persistent disruptive behaviour or verbal abuse toward another child or adult.

4.4 Provisions made for young people

Exploratory analysis of information in school records was carried out to investigate the extent to which support was tailored towards the needs of young people with or without ADHD. Overall, a range of interventions and strategies were provided to the young people, both in their mainstream and alternative education settings. These included a variety of classroom strategies such as one-to-one support from a Teaching Assistant, and

behavioural strategies such as having a behaviour report card or 'time-outs', as well as provisions to support specific learning needs, such as literacy booster and small group intervention classes. However, the numbers of young people receiving these interventions were small.

In terms of whether support was being targeted at those who had the greatest need, results indicated that those with ADHD were significantly more likely than those without to have received some kind of non-therapeutic one-to-one support while in their mainstream school (e.g. support from a teaching assistant or mentor). This suggests that something had alerted staff to there being a need for additional support for these young people. However, this support did not lead to these young people's education being maintained in the mainstream setting, as indicated by the fact that they were recruited to the study through their alternative provision. This is in line with previous research suggesting that the increased presence of teaching assistants has not contributed to better educational functioning for young people (Blatchford, Russell, & Webster, 2012; Blatchford, Webster, & Russell, 2012). One possible explanation for this was that there is an underlying need such as ADHD that remained (and possibly remains) unidentified. This is probable given that only one individual in the current study had a historical diagnosis of ADHD.

In terms of the provisions made for young people in their alternative education placements, the broadest categories of support were arguably whether they were accessing their education via a PRU or the SEN school. Young people with ADHD were no more likely to be found in either setting. However, those

with CD were more likely to be found in a PRU than the SEN school, but low numbers of individuals rendered this analysis unreliable. There was an apparent relationship between the reason for attending alternative provision and the type of provision that a young person was attending. All of the individuals for whom the reason was 'Level of (special educational) need' were attending the SEN school, and all individuals who had been permanently excluded or had Statemented social, emotional, or behavioural difficulty as their reason for attending, were in education at one of the PRUs. This suggests that attention was paid to which setting might be best for these young people to support their access to education, although it did not seem to have triggered further diagnostic assessments. Even Statements of SEN and/or cognitive assessments, which many of the young people in the study had received, did not seem to have triggered any assessments for underlying clinical explanations.

Within the alternative education settings, those with ADHD were no more likely to be receiving any particular type of intervention, behavioural, educational, or one-to-one support. This could be argued to indicate that there are a group of children, outside of mainstream education, who are being provided with alternative provision as a homogenous group of 'problem' children, particularly where behavioural difficulties may be part of the presenting problem.

4.5 Clinical implications

4.5.1 Identification of needs

The fact that those with ADHD were more likely to have been picked up by staff for one-to-one support in their mainstream classroom is positive. However, if ADHD is impacting on a young person's ability to function in the first place and it remains unidentified (and thus untreated), then other attempted provisions, such as pastoral support or additional in-class behavioural and learning support, may have less chance of success. This demonstrates well the need for these difficulties to be picked up and supported earlier on. School staff are well placed to identify such needs as it is likely that difficulties have been evident for these young people for some time at school, with classroom problems, disruptive behaviour, and repeated exclusions the rule rather than the exception. However, it is important to acknowledge that supporting young people who are struggling in education is not just a matter for those providing the teaching.

The majority of parents of children with difficulties such as ADHD and CD have expressed their concern to teaching staff but many have also attempted to seek help from other mental health professionals (Green et al., 2004). A variety of mental health provisions are commonly available in schools in the UK, with 86% of secondary schools providing pupils with access to a trained or qualified counsellor and 98% having pastoral care services (DoH, 2015). In this study, in addition to the educational and behavioural interventions that were found, a

number of the young people also had documented involvements with non-educational services where they were being provided with psychological and therapeutic support with just under one-third of participants having documented involvements with Child and Adolescent Mental Health Services (CAMHS). Yet only one young person with a positive screen for ADHD had a historical diagnosis. There is an important role for clinical psychologists and mental health services in providing support to school staff to develop their awareness of mental health and to support easy access to services so that staff can feel able to make onward referrals even if they are not able to conduct screening in the school.

There has been a recent call in Parliament for more comprehensive screening of neurodevelopmental and clinical conditions in cases where there have been early indicators of difficulties. One recommendation was that, if a young person has received two fixed-term exclusions from school, then this should act as a 'red flag' for professionals and trigger neurodevelopmental assessments for difficulties such as ADHD (UK ADHD Partnership, 2015). Special Educational Needs Co-ordinators would be well placed to facilitate this if they were involved early on. Educational psychologists also provide an important service in completing initial screening and assessment measures and cognitive assessments, and can in turn refer on to local mental health or neurodevelopmental services for full clinical assessments and diagnoses when indicated. However, it has also been recommended that there is a need for mental health services to provide more integrated services, with clinical

psychologists and other mental health professionals working more closely with education services (DoH, 2015).

Early screening has recently been discussed in relation to other services and screens are being developed for this purpose. For example, Chitsabesan et al. (2014) recently developed the Comprehensive Health Assessment Tool (CHAT) that, they suggest, could be administered to all young offenders upon reception at services within the secure estate. The CHAT is designed to indicate presence of neurodisability, substance use, physical health, and mental health needs, and contributes to an integrated approach to needs assessment of these young people. Many young people in alternative education, particularly those attending schools for those with emotional and behavioural difficulties such as PRUs, are likely to have similar needs to their peers within the secure estate, and may well have had contact with forensic services themselves already. Such an integrated assessment approach could therefore be helpful upon reception into alternative education establishments, and could provide information enabling staff to signpost to appropriate services for further assessment and/or develop targeted needs-based provision within their setting that may reduce the risk of negative outcomes for the young person.

4.5.2 Providing interventions

As a clinically recognised, mental health condition, ADHD has a number of treatment options that have repeatedly been demonstrated to reduce

symptoms and the associated impairment. For young people with moderate impairment, psychological approaches are recommended and, for those with severe or persisting impairment, it may be that pharmacological treatment is sought (NICE, 2009). Medical treatment, in turn, may assist with symptom reduction enough to enable the young person to access psychological, and therefore possibly educational, interventions. However, accessing treatment of any sort first requires effective identification of needs and it is therefore important that screening processes/needs assessments such as those described above become more routine. Such protocols must be implemented as early as possible in order that timely intervention can be provided to avoid a crisis or a need for longer term treatment later in life that becomes more expensive to provide (DoH, 2015).

This thesis study has included those young people and their families who may be considered the least likely to engage with services, and this represents a challenge for clinicians working in this field. Taylor (2012) identified in his report that, among children referred to PRUs and other alternative provisions, many have experienced social deprivation and difficult family backgrounds. In the UK it has been reported that both children with hyperkinetic disorders and children with conduct disorders are more likely to have experienced parental separation, and their parents are more likely to have experienced major financial difficulties, have been in trouble with the Police, or have had a serious mental illness of their own (Green et al., 2004). This highlights the breadth of need among these young people, and Taylor (2012) identified that breaking

complex patterns of challenging behaviour and associated difficulties takes time, effort and commitment.

Although those with ADHD were not necessarily accessing treatment for such needs, it may be that, in alternative provision, young people and their families are able to access more specialist therapeutic support. For example, three individuals from the PRUs in this study were receiving Multisystemic therapy (MST), a specialised model of therapy that aims to reduce anti-social behaviour through supporting parents/carers to effectively manage the challenging behaviours of their young person (Henggeler, Schoenwald, Borduin, Rowland, & Cunningham, 2009). MST therapists work intensively with the family and also provide support across settings (e.g. school, home, community activities) on the basis that all life domains contribute to anti-social behaviour (see Henggeler et al., 2009). This kind of systemic approach is important for the families of children likely to be accessing alternative education, particularly those excluded for disruptive behaviour.

4.5.3 Developing services

Meeting the mental health needs of young people has been the focus of a recent report that identified a need for changes to be made to the way in which clinical services are provided (DoH, 2015). In this report, it was recommended that mental health specialists should be integrated directly into both schools and General Practice surgeries. Where external services are required, the report called for more effective partnership working between agencies (e.g.

NHS, Local Authorities, social care, schools, and youth justice service). This would include improved communication between services and transparent referral pathways to facilitate the provision of early interventions (DoH, 2015).

The further challenge for clinicians in delivering services for young people with ADHD and associated needs is not only in engaging families who may have complex biopsychosocial backgrounds, but also in maintaining their engagement. With regard to ADHD, it has been reported that many young people who have been successfully accessing treatment for some time find it difficult to sustain their engagement with treatment. In this study, those aged 15 or 16 will be approaching a transition from child to adult services, and this represents a particularly common time for service disengagement (McCarthy et al., 2009; Singh, 2009). In light of this, services may need to expand and develop links with colleges and universities in order to continue supporting these individuals through this transition period and into early adulthood. Mental health professionals may be able to provide consultation and training to encourage further education establishments and employers to expand their awareness of ADHD.

4.6 Strengths and limitations of the study

The findings of this thesis should be considered in light of several limitations. Firstly, it is important to acknowledge that there are other important comorbidities such as autistic spectrum disorders (Simonoff et al., 2008) that are also more common among those with ADHD. Consideration of differential

diagnoses when assessing for ADHD is key in the diagnostic process (APA, 2013), but additional screening measures were not included in this study due to concerns about the response burden on participants with attention difficulties if too many measures were included, both ethically and in terms of the potential impact on recruitment. This relates to a second limitation, in the reliance on screening measures for establishing diagnostic status. Such measures, although useful proxies in research, are not a substitute for a full clinical assessment, and prevalence rates therefore only represent an estimate of potential difficulties. It is also notable that no individuals screened positive for ADHD Hyperactive/Impulsive subtype in this group. It has been reported that these symptoms remit in adolescence to a greater degree than inattentive symptoms, which may partly explain this finding. However, it is not the case that there were no Hyperactive/Impulsive individuals in the study, rather that these young people were rated as having high levels of inattentive symptoms as well as hyperactive/impulsive symptoms, meaning that they met threshold for ADHD Combined subtype overall.

Although the reliance on screening questionnaires is important to acknowledge, this study had a strength in the inclusion of an informant measure rather than further relying on the self-report of the young people. Young people have been previously found to under-report their difficulties (e.g. Barkley, Fischer, Smallish, & Fletcher, 2002; Danckaerts, Heptinstall, Chadwick, & Taylor, 1999), and there may be added unreliability due to the dependence on the self-completed questionnaires of individuals who may have literacy difficulties or attention problems. However, teacher-report

questionnaires were used in this study for classifying diagnostic status of externalising disorders, and teachers have been reported to be the most reliable informant compared with full psychiatric assessments (Young et al., 2010).

Obtaining reports from teachers did not pose a challenge in these alternative education settings because there were fewer staff members teaching fewer young people, enabling the teachers to be much more familiar with their pupils than they might be in a large, mainstream secondary school. It has been suggested that teachers may not be well placed to comment on externalising symptoms of CD or ODD (Barkley & Murphy, 2006), although they may, if anything, have under-rated these symptoms if they were not able to rate them with certainty. Indeed, two ODD screens were left blank by teachers who did not feel able to comment on these symptoms. This would suggest that the high rates of symptoms do reflect real difficulties in order for teachers themselves to be aware of them. Nonetheless, it would have been preferable to have symptoms rated by parents as well, but recruiting parents in to this study proved difficult. Anecdotal reports from staff at the sites suggested that engaging with the families of their young people was a daily challenge. This is perhaps not surprising given that this study has included those young people from families with complex needs and difficult social backgrounds who may be considered the least likely to engage with services. It does, however, highlight an important consideration with diagnosing in mind, in that symptoms are required to be pervasive across settings and so a parent report is necessary to evaluate the frequency and impact of symptoms at home, which teachers may

not be best placed to comment on in more thorough, clinical assessment procedures.

It has been suggested that teachers may not be well placed to comment on externalising symptoms of CD or ODD (Barkley & Murphy, 2006). In the past, research has highlighted a discrepancy between parent- and teacher-ratings. For example, Gomez, Burns, Walsh, and Hafetz (2005) reported greater levels of variance for parent-report inattentive symptoms compared with teacher-report symptoms, but lower levels of variance for parent-report hyperactive/impulsive symptoms compared with teacher ratings. In terms of explaining this discrepancy it has been suggested that, not only do parents and teachers observe different behaviours of the young person, but also that parents may be more biased in their ratings of ADHD symptoms than teachers (Hartman, Rhee, Willcutt, & Pennington, 2007). Young et al. (2010) attempted to combine ratings from different sources to improve classification accuracy, but reported that this only resulted in the over-classification of ADHD. The lack of parent-data in this study means that no analysis could be conducted to identify differences in the reports of different informants for this population, which, in turn, may have influenced prevalence estimates (e.g. Hartman et al., 2007; Young et al., 2010). The reliance on screening measures also limited the estimation of rates of anxiety and depression as common co-morbidities among this sample, in that the sub-scores of the GHQ are used as continuous variables only. The overall score of the GHQ could be used categorically to indicate presence or not of psychological distress or 'caseness' and the rate of this appeared higher than would be expected based on general population

rates of the common co-morbidities, but it would be helpful among this impaired group in future research to examine the prevalence rates of individual co-morbidities as well.

A further consideration of the study is how representative the sample is of the wider population of young people in alternative provision in the UK. By the nature of the setting, this study has selected a subgroup of children having the most difficulty in school, but it is necessary to acknowledge the inclusion of children from two different types of alternative provision, PRUs and a SEN school, whose placement in one type of provision over another may reflect differing symptom profiles and thus different intervention needs. There were also high non-participation rates across both the PRU and SEN school settings. However, the study has strength in its inclusion of a non-referred, community sample of young people that was broadly representative, in terms of ethnic background, of the wider UK alternative provision population, according to recent statistics published by the DfE (2013), although there was a slightly greater number of males in this study compared with the national figures. The majority of adolescents accessing alternative education are boys (DfE, 2013), but it is important to acknowledge that they may have different needs to their female peers. For example, it has been reported that girls with ADHD and co-morbid ODD or CD might have more social problems than boys (Carlson, Tamm, & Gaub, 1997). Other previous studies have reported that girls and ethnic minorities with ADHD are even less likely to receive treatment for their difficulties (e.g. Audit Commission, 2002).

In terms of statistical findings, the differences between those with and without ADHD represented small effect sizes, with the exception of the CD and ODD scores. The size of the sample recruited in the study therefore lacked the statistical power necessary to detect differences of this size limiting the interpretation of some of the statistical analyses. One example is the findings reported for TBI for which, even with the inclusion of three levels of mild injury (i.e. 'minor concussion', 'mild TBI', and 'complicated mild TBI') providing greater sensitivity for a wider range of less severe injuries (Davies et al., 2012), the sample size was not sufficient to find associations reported in previous research (e.g. Keenan et al., 2008). It is possible that, because of the nature of the sample selected in the thesis study, namely those accessing alternative education, smaller differences were present between those screening positive or negative for ADHD than might be expected in a mainstream classroom. One explanation for this could be that those screening negative for ADHD were still, on average, scoring highly but within the sub-threshold range of scores, thus reducing the difference between those above and below the threshold. According to Cohen (1992), to detect differences of small effect size between two independent groups a much larger sample would be required. In this regard it is also worth considering the statistical approach taken, in terms of whether it might be of clinical value to consider the overall profile of symptoms for each individual rather than using cut-off scores and discrete diagnostic categories. Even though the formal cut-off criteria may be required in order to access pharmacological or psychological treatments for disorders such as ADHD, the pool of those who may benefit from other

support such as in-class strategies may be widened if those with sub-threshold difficulties are also included.

A final consideration in this study is the lack of consistency in information available from one young person's school record to another. The files differed in length and in the amount of paperwork that was available, which may or may not reflect actual provision or level of need. Additionally, as mentioned, it was not possible to assume that lack of information in the file meant that a particular provision or event had not occurred (e.g. permanent exclusion, Statement or EHCP). Furthermore, record information for children at the SEN school was provided to the researcher by staff, and the researcher therefore did not have the opportunity to seek further details from the files. One important piece of information that was not available in the school record was about medication that the individual was receiving. It is possible that some individuals were receiving medication for difficulties such as ADHD, reducing the impairment they exhibited. This could have been asked of the parents/carers had more been recruited for the study, and would have given some additional understanding of the potential true levels of impairment in this group in addition to the information obtained from the files. However, in order for medication to be received, it is highly likely that a diagnosis would have had to be given, for example of ADHD, and this probably would have been found in the school records. The fact that only one person had a historical diagnosis of ADHD suggests that very few individuals would have been receiving medication for their potential symptoms in this group.

4.7 Future research

Future research to build on the findings from this study will be helpful in furthering the understanding of the needs of young people in alternative education. Further identifying the specific nature of the learning difficulties these young people present with in addition to screening more broadly for LD would be helpful and would contribute to a more detailed understanding of the specific profiles of needs in this population. The thesis findings do tend to indicate that those with ADHD and associated needs are unidentified despite their high levels of impairment and disruptive behaviour. Studies in mainstream settings could be carried out to investigate the psychological and behavioural profiles of children for whom classroom support is successful, compared to those it is not, would also be helpful. This would involve identifying those with high levels of impairment (e.g. educational impairment, disruptive behaviour) for whom provisions are made, who do not continue on the pathway to exclusion and alternative education, compared with those who do, and could go some way to identifying particular sub-groups of young people for whom greater, or more specialist, support might be required. Part of this would be to further untangle the effects of the different externalising disorders, possibly through longitudinal studies with larger samples, to establish whether there are differing aetiological pathways for these disorders when they occur together (Martin, Levy, Pieka, & Hay, 2006) and whether young people with specific patterns of symptoms are at particular risk of educational difficulty, as they seem to be for other negative outcomes (e.g. Nigg, 2013; Satterfield et al., 1994; Young & Gudjonsson, 2008).

As well as furthering clinical understanding of the needs of these young people, future research will also be informative for clinical psychologists in their leadership and service development capacity. For example, there is no indication from the thesis study as to how or why potential cases of ADHD were not detected. Future research, which may be through local audit or larger-scale cohort studies, could focus on finding out from young people and their parents/carers where they have sought advice and what procedures have been attempted, in order to identify areas of services that could be targeted for change in line with the recommendations discussed.

4.8 Conclusion

This study of young people accessing education through alternative provision in England found that these individuals are at increased risk of developing symptoms of several mental health conditions with elevated rates of ADHD and common co-morbidities such as CD and ODD. These rates were substantially higher than those found in the general population but the vast majority of symptomatic individuals were previously unidentified. There is a lack of routine screening protocols that detect these needs for young people in schools, even in cases of frequent and/or severe disruptive behaviours, which were more common among those with ADHD. Although there was some indication of one-to-one support being targeted towards those with ADHD in mainstream settings, there was no suggestion that this led to any particular referral onward for support, any formal screening or identification procedure in

terms of finding the underlying cause of difficulties, or that it led to future support being provided to the young person in their alternative provision.

Research has indicated that the outcomes for these young people are not good if they remain untreated. They are likely to underachieve in education, which, in turn, has implications for their future. For many children who present as these children do, the pathway is often one that takes them out of the classroom and in to forensic services. The high cost of ADHD indicates that there is a strong case (including an economic argument) for prioritising early identification and intervention for young people at the greatest risk. ADHD has several treatment options reported to be successful in reducing both the core symptoms and the associated impairment. There seems to be a gap in services currently through which these children fall, and which mental health professionals share a responsibility with education staff to address by way of training and consultation, and through the provision of accessible and flexible mental health services that can meet the needs of vulnerable children and families with complex needs.

5. References

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Appendix A

Email confirmation of original ethical approval.

Ref: 2013/019R1 Ethics Form Approved Clinical x

5/30/13 ☆

Application Details:

Applicant Name: **Emily Goodwin**

Application title: **Psychological and behavioural disorders and functional impairment among young people in pupil referral units: providing for their needs.**

Comments: Hi Emily, Thank you for a thorough job on this revision! Just a few comments, for information, from one of the reviewers... This is now approved and ready to go.
Patrick

Reviewer comments.
This is now much clearer and as long as the Chair accepts that the opt-out procedure seems appropriate, it all seems fine to me.
Two small recommended amendments.

- I would probably make the opt-out form statement a little clearer with some typesetting changes. Perhaps: "I [name] have read the information sheet about this study. I DO NOT wish my child to take part and would like to OPT OUT of the study." --> where the words in capitals also go in bold. This is just to safeguard against any parent absentmindedly filling this in and thinking it is a consent form.

- The parent information sheet mentions "when you come to the school in September". This jumped out at me a bit - can we assume that all parents will already know that they will be visiting the school in September? Do they have a fixed date / event for this? Maybe "in September for the Open Day / parent-staff meeting" would be clearer.

Email confirmation of ethical approval following extension of the study period.

Ref: 2013/019R2 Ethics Form Approved

9/11/14

Application Details: View the form [click here](#). Revise the form [click here](#).

Applicant Name: **Emily Goodwin**

Application title: **Psychological and behavioural disorders and functional impairment among young people in pupil referral units: providing for their needs.**

Click here to [Reply](#), [Reply to all](#), or [Forward](#)

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Appendix B

Disruptive Behaviour Rating Scales (Barkley & Murphy, 2006)

Self-report version

Not included due to copyright restrictions.

Disruptive Behaviour Rating Scales (Barkley & Murphy, 2006)

Informant-report version

Not included due to copyright restrictions.

Appendix C

Child and Adolescent Intellectual Disability Screening Questionnaire

(McKenzie & Paxton, 2012)

Not included due to copyright restrictions.

Appendix D

General Health Questionnaire (Goldberg & Williams, 1988)

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Appendix E

Traumatic Brain Injury Screen (Williams, Cordan, Mewse, Tonks, & Burgess, 2010)

SELF-REPORT HEAD INJURY SCREEN **(items taken from Williams et al., 2010 and Davies et al., 2012)**

1. Have you ever had a blow to the head causing you to be knocked out, and/or dazed and confused, for a period of time?

Yes No

2. Please estimate the length of time you experienced a loss of consciousness:

- 0 = *no history*
 1 = *feeling dazed and confused but no LOC, minor concussion*
 2 = *LOC <10 minutes, mild TBI*
 3 = *LOC 10 to 30 minutes, complicated mild TBI*
 4 = *LOC 30 to 60 minutes, moderate/severe TBI*
 5 = *LOC >60 minutes, very severe TBI*

3. How many times have you been knocked out and/or dazed and confused?

.....

4. What was the cause of your injuries?

.....
.....
.....

5. How old were you when you had your “worst” injury?

..... years

Appendix F

Academic performance rating

Participant number: _____

Academic performance rating (teacher)

Thinking about what you might expect from their peers in mainstream education, please rate the academic performance of the young person (please circle the appropriate answer):

Significantly below average	Below average	Average	Above average	Significantly above average
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Appendix G

Impairment Rating Scale (Fabiano et al., 2006).

Narrative Description of Child -- Parent

Child's name: _____ Form completed by: _____

Date completed: _____

Instructions: In the space below, please describe what you see as your child's primary problems, both at home and at school. Also, please describe how your child's problems have affected the following areas and complete the rating at the end of each: (1) his or her relationships with playmates and brothers or sisters, (2) his or her relationship with you (and your spouse if present), (3) his or her academic progress at school, (4) his or her self-esteem, and (5) your family in general. Continue on a separate sheet if necessary. For the ratings, please mark an "X" on the lines at the points that you believe reflect the impact of the child's problems on this area and whether he or she needs treatment or special services for the problems. **PLEASE COMPLETE BOTH SIDES OF THIS FORM.**

(1) How your child's problems affect his or her relationship with playmates

No Problem | _____ | Extreme Problem
Definitely does not need treatment or special services | | Definitely needs treatment or special services

Regardless of whether this child is popular or unpopular with peers, does he or she have a special, close "best friend" that he or she has kept for more than a few months? (Please circle)

YES NO

How your child's problems affect his or her relationship with brothers or sisters
(If has no brothers or sisters, check here and skip to #2 _____)

No Problem | _____ | Extreme Problem
Definitely does not need treatment or special services | | Definitely needs treatment or special services

(2) How your child's problems affect his or her relationship with you (and your spouse if present)

No Problem | _____ | Extreme Problem
Definitely does not need treatment or special services | | Definitely needs treatment or special services

(3) How your child's problems affect his or her academic progress at school

No Problem | _____
Definitely does not need
treatment or special services

| _____ Extreme Problem
Definitely needs treatment
or special services

(4) How your child's problems affect his or her self-esteem

No Problem | _____
Definitely does not need
treatment or special services

| _____ Extreme Problem
Definitely needs treatment
or special services

(5) How your child's problems affect your family in general

No Problem | _____
Definitely does not need
treatment or special services

| _____ Extreme Problem
Definitely needs treatment
or special services

Please mark an "X" on the following line at the point that you believe reflects the overall severity of this child's problem in functioning and overall need for treatment.

No Problem | _____
Definitely does not need
treatment or special services

| _____ Extreme Problem
Definitely needs treatment
or special services

Parenting Skills 2

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Appendix H

Home Situations Questionnaire (Barkley, 2013; Barkley & Murphy, 2006)

Not included due to copyright restrictions.