

Experiences of Adults with Attention Deficit Hyperactivity Disorder and Relationship to Executive Function Deficits

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Thesis Abstract

Attention-Deficit/Hyperactivity Disorder (ADHD) is characterised by symptoms of hyperactivity, impulsivity and attentional difficulties. Originally thought to be a condition of childhood, ADHD has now been recognised in adults.

One of the main theoretical explanations of ADHD is related to deficits in Executive Functioning (EF). The state of current knowledge regarding the relationship between EF and ADHD was reviewed. Findings suggest that adults with ADHD are likely to exhibit deficits in EF mainly related to response inhibition, set-shifting or working memory. Deficits in EF as shown on neuropsychological tests may help to identify people who are at risk of under achieving in various life domains such as education or occupation. Tests of EF which are more ecologically valid may be more sensitive to EF dysfunction than traditional measures.

The experience of having adult ADHD and preferences for support were explored using Interpretative Phenomenological Analysis (IPA). Four super-ordinate themes emerged from five interviews: 'Process of adapting to ADHD', 'Social Appraisal', 'Self-regulation' and 'Coping'. Participants described an adjustment process which impacted on their identity and the impact on self-perception was evident. ADHD was not understood well by others and some participants experienced stigma and bullying. A range of coping strategies were identified and clinical implications and limitations of the study were discussed.

Finally, a commentary and reflexive analysis of the research process was offered and factors influential to the research were discussed.

Preface

The three chapters of this thesis comprise a literature review, an empirical study and a reflective paper. The literature review has been written in preparation for submission to the Journal of Attention Disorders and the empirical paper has been written for submission to the British Journal of Psychology. The style, format and presentation reflect this. The guidelines to authors for these journals are listed in Appendix IX. Extensive tables are presented separately in Appendix III. Directions to tables have been given in the text as appropriate.

The third chapter contains a reflexive analysis and commentary of the research process written in the first person.

The total word count is 19,750 and conforms with the requirements for thesis submission to Staffordshire University.

Chapter 1: Literature review

A Review of Executive Functioning in Adults with Attention Deficit Hyperactivity Disorder

**This chapter will be submitted to the Journal of Attention Disorders
(see Appendix IX for author guidelines).**

Abstract

Objective. To review the relationship between Executive Functioning (EF) and Attention Deficit Hyperactivity Disorder (ADHD) in adults.

Methods. Searches for research published between 2006 and 2013 were carried out using PsychINFO, CINAHL, MEDLINE, Embase, and Web of Knowledge electronic databases. Studies were selected where participants were aged 18 and over and neuropsychological measures of EF had been utilised. A control group was used for comparison in all studies.

Results. Papers accessed through peer reviewed journals showed evidence that adults with ADHD are likely to exhibit deficits in EF related to response inhibition, set-shifting and working memory.

Conclusions. Deficits in EF as shown on neuropsychological tests may help to identify people at risk of under-achieving in various life domains. Some EF deficits may not be revealed by neuropsychological testing. Tasks which are more ecologically valid or highly demanding may be more sensitive to EF deficits. There is some evidence that EF profiles determined by neuropsychological testing may provide a means to differentiate certain developmental conditions such as ADHD and Autistic Spectrum Disorder (ASD).

1.1. Introduction

The aim of this review is to explore the relationship between Attention Deficit/Hyperactivity Disorder (ADHD), which is characterised by the core symptoms of hyperactivity, impulsivity and attentional difficulties (Young & Bramham, 2007) and Executive Functioning (EF) in adults. Despite considerable research, the exact nature of this relationship remains unclear. A review of the recent literature was carried out with the aim of enhancing current knowledge and understanding of this relationship

1.1.1. Prevalence of ADHD

Worldwide prevalence of ADHD in children is estimated at around 5% (Polanczyk, Silva de Lima, Horta, Biederman & Rohde, 2002), with approximately 65% of them continuing to have difficulties in adulthood (Faraone, Biederman & Mick, 2006).

Prevalence of ADHD in adults is estimated at between 2.5% (Simon, Czobor, Balint, Meszaros & Bitter, 2009) and 4.4% (Kessler et al., 2006) of the population. These figures may underestimate actual prevalence due to the Diagnostic and Statistical Manual of Mental Disorders (4th ed., text rev. 2000) (DSM-IV; see Appendix I) criteria for ADHD which do not include developmentally appropriate symptoms and diagnostic thresholds and have never been validated in adults (McGough & Barkley, 2004).

Prevalence estimates of ADHD worldwide show no significant differences between North America and Europe, South America, Asia and Oceania, but

are significantly lower in Africa and the Middle East (Polanczyk, et al., 2002). This may result from culturally different interpretation and tolerance of ADHD symptoms and method of assessment, particularly in relation to performance on neuropsychological measures (Fayyad et al., 2007).

1.1.2. The concept of ADHD

The concept of ADHD as a distinct condition has attracted considerable controversy. It has been argued that ADHD is a social construction encouraged by drug companies where medication is given in the absence of reliable, scientific criteria for diagnosis (for example, biomedical markers such as blood analysis), and is used as a means of social control in individuals who are considered to be behaviourally challenging (Baldwin & Cooper, 2000). The main arguments in relation to the concept of ADHD centre around issues of diagnostic validity, presentation, treatment and aetiology (Zwi & York, 2004) and these will now be discussed.

1.1.2.1. Diagnostic issues

The clinical diagnosis of ADHD is frequently based on DSM-IV criteria, which was originally designed for the diagnosis of school-age children (McGough & Barkley, 2004). Since age-related changes are not accounted for in DSM-IV, these criteria may be too stringent to enable accurate diagnosis of ADHD in adults who are more likely to be able to exercise control over their impulses (Young & Bramham, 2007). Various adaptations of DSM-IV criteria have been employed to diagnose adults, mostly involving retrospective

consideration of ADHD symptoms and impairments present before the age of seven.

Criteria for adult ADHD have been more specifically considered in the recently updated DSM-V (2013). (see Appendix I for DSM-IV and DSM-V criteria), where diagnosis requires that five of the nine symptoms of hyperactivity/impulsivity and/or inattention have been present 'to a degree that is inconsistent with developmental level and that negatively impacts directly on social and academic/occupational activities' (DSM-V, 2013, p. 45). This enables a more contextually sensitive diagnosis by enabling symptoms to be compared with expected cultural and developmental norms.

Further disputes regarding the validity of ADHD as a diagnosis in adults have resulted from differences observed in symptoms and gender profiles between adults and children. ADHD tends to occur equally in men and women, whereas in children it is much more common in males (Weiss & Weiss, 2004). This may be due to referral bias. In childhood, referral is usually initiated by parents or teachers. Greater numbers of boys may be referred to services as there is evidence of a stronger association with disruptive behaviour and conduct disorder in boys than girls with ADHD (Simon et al., 2009). As adults are more likely to self-refer for diagnosis, referral bias is less likely to occur (Simon et al., 2009). Furthermore, some symptoms of ADHD tend to manifest more subtly in adults. For example, hyperactivity may present as excessive talkativeness or workaholism.

Difficulties when forming a diagnosis can also result from the considerable overlap between ADHD symptoms and other disorders (Moncrieff & Timimi, 2011), though Asherson et al. (2010) contend that ADHD symptoms have been validated and differentiated from other neurodevelopmental conditions in both clinical and population studies.

Diagnosis can be a mixed blessing. Lack of recognition and understanding of ADHD may result in many adults being denied appropriate treatment and support. Diagnosis may facilitate access to appropriate services and support (Kooij et al., 2010). However, having a diagnosis of ADHD can be stigmatising (Canu, Newman, Morrow & Pope, 2008) which can lower self-esteem and may lead to decreased social opportunities (Corrigan, 2004).

1.1.2.2. Presentation of ADHD in adults

The argument around presentation of ADHD relates to clinical features such as difficulties with concentration, finishing tasks or maintaining routines, memory problems, disorganisation and relationship difficulties which may also be observed in non-ADHD individuals (Toone, Clarke & Young, 1999). However, these deficits must have a direct, negative impact on daily life before a diagnosis of ADHD can be given (DSM-V, 2013).

Symptoms are likely to become more significant in adulthood due to increased demands and responsibilities and the need for independent functioning (Wender, Wolf & Wasserstein, 2001). Problems experienced by adults with ADHD may include difficulty finding and keeping employment

(Haavik, Halmoy, Lundervold & Fasmer, 2011) risk-taking and antisocial behaviour (Barkley, Murphy and Fischer, 2008), low frustration tolerance, mood lability, disinhibition, multiple racing thoughts, procrastination, planning and time-management difficulties, and low self-esteem (Young and Bramham, 2007). Brod, Schmitt, Goodwin, Hodgkiss & Niebler (2012) suggest that ADHD may have a cumulative negative impact on professional, financial, social and psychological well-being.

Amelioration of ADHD symptoms can occur in some adults. This is attributed to the development of cognitive strategies and the ability to make changes in the environment, for example by working on physically demanding tasks in order to capitalise on excess energy and achieve optimal functioning. (Newton-Howes, 2004; Young & Bramham, 2007).

Presentation of ADHD is complicated by the high prevalence of co-occurring mental health issues and their relationship to problems with self-esteem, social skills deficits and adjustment problems (Kessler et al., 2006). The mental health difficulties most commonly associated with adult ADHD include anxiety and depression, bipolar disorder, substance misuse and borderline or antisocial personality disorder (Schmidt & Petermann, 2009). Sleep problems, obesity and learning difficulties may also impact on daily life (Haavik et al., 2011). Overlap between ADHD and disorders with similar symptoms may result in difficulty differentiating between conditions, although variations in the presentation of symptoms are sometimes seen. For example, symptoms of mania may be observed in both ADHD and bipolar

disorder. In ADHD, however, mood shifts and irritability are unpredictable and may last for hours or days, whereas in bipolar disorder, elevated mood is likely to last for a minimum of one week and to show a more cyclical pattern (Tzelepis, Schubiner & Warbasse, 1995). It is important to recognise comorbid problems in order to offer appropriate support and treatment (Young & Bramham, 2007).

1.1.2.3. Treatment

National Institute for Health and Care Excellence Guidelines (NICE; 2008) state that medication in the form of stimulants such as methylphenidate and dexamfetamine, or the selective noradrenaline reuptake inhibitor (NRI) atomoxetine is the treatment of choice for ADHD. However, medication is not always accepted or tolerated, and functional impairments may persist despite the medication (Wilens, et al., 2001).

The benefits of stimulant medication are claimed to have been overstated, and the risks understated (Moncrieff & Timimi, 2011). Additionally, it is argued that amphetamines have toxic and addictive properties which impact on the Central Nervous System causing blunting and restriction of emotions and behaviour (Baldwin & Cooper, 2000).

Evidence for the efficacy of stimulant medication (Greenhill, 1998) has been disputed on the grounds that much of the research has been sponsored by pharmaceutical companies (Baldwin, 2000; Baldwin & Cooper, 2000). Also, it has been suggested that some drug companies have attempted to

popularise ADHD as an adult diagnosis by marketing and sponsoring websites containing self-administered questionnaires to encourage self-diagnosis (Moncrieff & Timimi, 2011).

Despite little evidence of sustained positive long-term outcomes of drug therapy and only marginal effects in the short-term, prescriptions for stimulant medication associated with ADHD increased in America by 90% between 2000 and 2005, with approximately one third of all prescriptions given to adults (Okie, 2006).

In addition to medication, National Institute for Health and Clinical Excellence Guidance (NICE; 2008) also recommend psychological treatment in the form of Cognitive Behaviour Therapy (CBT). A multimodal approach to treatment involving medication and CBT, coaching, family therapy and medication and psycho-education related to co-morbid disorders has been suggested (Kooij et al., 2010). Such a treatment plan can positively influence an adult's ability to function in interpersonal, psychological, academic and occupational domains and may enhance self-confidence and reduce the impact of cognitive deficits (Kooij et al., 2010).

1.1.2.4. Theories of causation

ADHD is a heterogeneous condition suggestive of a complex interplay of causal factors (Castellanos & Tannock, 2002). Various hypotheses have been investigated.

A number of prenatal and perinatal factors have been considered in relation to an increased risk of developing ADHD. These include parental ADHD, in utero exposure to cigarettes and alcohol, in utero brain injury and low birth weight (Mick, Biederman, Prince, Fischer & Faraone, 2002). No definitive conclusion can be drawn regarding perinatal factors and ADHD as few studies adjusted for familial psychopathology, research has mainly relied on retrospective assessment of prenatal exposure and there has been a lack of diagnostic assessment of ADHD (Linnet, et al., 2003).

Psychosocial factors such as parenting style, attachment issues, home environment and poor teaching have also been considered as causal factors. Evidence suggests that these factors, though likely to impact on the trajectory of problem development and contribute to the maintenance of ADHD, may not actually be a cause (Nigg, 2006).

Dietary factors such as food additives, allergies, deficiencies and toxins have been investigated as causal factors, with little success. The most promising connections between food and ADHD are related to dietary shortage of Omega-3 fatty acids and the role of organophosphate pesticide residues in food, although much more research is needed before definitive links can be made (Nigg, 2006).

Adoption and twin studies have estimated heritability factors to account for approximately 75% of the aetiology of ADHD (Spencer, Biederman, Wilens,

& Faraone, 2002). Genetic studies have shown variable results, but suggest that several genes may be associated with the condition. The genes so far identified tend to be associated with dopaminergic or noradrenergic pathways, although this may be due to methodological issues where specific candidate genes are selected and examined based on theoretical and empirical evidence (Castellanos & Tannock, 2002; Spencer, et al., 2002).

Kooij et al. (2010) have suggested a primary role for genetic influences in ADHD as evidenced by high heritability rates. They reported cognitive, electrophysiological and neuroimaging case control studies, which have shown evidence of brain functioning anomalies. They also suggest that the effectiveness of pharmacological treatments with dopamine offers support for an underlying neurobiological factor in ADHD (Kooij et al., 2010).

Recent developments in neuroimaging technology have enabled exploration of cognitive and neurological difficulties that may underpin the symptoms of ADHD. The brain regions most often implicated in ADHD are the prefrontal cortices, corpus callosum, basal ganglia and cerebellum, all of which are related to abilities involved in attention, motivation and control (Nigg, 2006). In addition, electroencephalogram (EEG) studies (e.g. Clarke, Barry, McCarthy & Selikowitz, 2001) have shown increased slow wave activity, indicating low levels of arousal, in children with ADHD.

Models of Executive Dysfunction have been suggested as explanations for the cognitive and behavioural difficulties associated with ADHD (Pennington & Ozonoff, 1996; Barkley, 1997).

Executive Function (EF) comprises a range of neurocognitive adaptive processes such as set-shifting, planning, working memory, contextual memory, inhibition and fluency (Pennington & Ozonoff, 1996) interference control, emotion regulation and using time to guide behaviour (Barkley et al., 2008). Deficits in these skills impact differently depending on the demands made of the individual's environment. A cycle of difficulties may develop in various aspects of life, particularly in relation to education, occupation, relationships and risk-taking behaviour (Young and Bramham, 2007). Despite considerable research, the relationship between ADHD and EF remains unclear.

It is clear that more research is needed before firm conclusions can be drawn regarding the concept of ADHD and the efficacy and risks related to stimulant medication. Advances in technology will increase the likelihood that underlying neurobiological mechanisms can be identified or eliminated. The British Psychological Society (2000) suggest the use of multimodal and multi-disciplinary assessment techniques and interventions in order to prevent inappropriate labelling and treatment of ADHD. The most important consideration for clinical psychology should be the negative personal and social impact of the presenting symptoms (Baldwin & Cooper, 2000).

1.1.2.5. Rationale for the review

The aim of this review is to provide an overview of the current evidence regarding the relationship between adult ADHD and Executive Function.

In 2005, two meta-analytic reviews were published examining the link between Executive Function and ADHD. Wilcutt, Doyle, Nigg, Faraone & Pennington (2005) suggested an association between ADHD and weaknesses in several domains of EF. In particular, deficits related to response inhibition, spatial working memory, vigilance and some aspects of planning were consistently found in individuals with ADHD (Wilcutt et al., 2005). The age range of participants was not specified, however, and the review concluded that EF weaknesses were neither a necessary nor sufficient causal factor in all cases of ADHD.

Conversely, Boonstra, Oosterlaan, Sergeant and Buitelaar (2005) looked specifically at EF in adults with ADHD. They found differences between adults with and without ADHD in areas of EF, but also in non-executive areas of cognitive functioning. Whilst adults with ADHD performed less well than controls on tests of verbal fluency, attentiveness, inhibition, verbal working memory, set-shifting and interference control, differences in interference control disappeared when Stroop Colour-Word results were controlled for colour naming. This review concluded that changes in methodology should be beneficial in addressing questions related to the EF theory of ADHD.

The aim of this review is to determine current knowledge regarding the relationship between ADHD and EF.

1.2 Method

1.2.1. Search strategy

Medline, Embase, Cinahl and PsycInfo electronic databases were searched through NHS Healthcare Databases Advanced Search (HDAS) for peer-reviewed articles written in English and published since the previous reviews, between 2006 and 2013. The Web of Knowledge database was also searched. The search strategy incorporated terms relating to ADHD (e.g. Attention Deficit Disorder with Hyperactivity, Attention Deficit Hyperactivity Disorder, ADHD, Attention Deficit Disorder, ADD) and Executive Function (e.g. Executive Function, prefrontal function). These two concepts were searched individually in HDAS and then combined. Each strategy was mapped to the thesaurus for each database and customized to meet the requirements of the database being searched. A flow chart of the search strategy is shown in Appendix II. The searches were restricted to peer reviewed journals to ensure quality, and only title and abstract were searched to ensure that papers retrieved focused specifically on ADHD and EF.

1.2.2. Inclusion/exclusion criteria

The inclusion criteria specified that studies would be included if:

- ADHD was one of the main conditions of interest

- Participants were aged 18 years and over throughout the study.
- The studies included at least one measure of Executive Function.
- The main focus of the study considered outcomes on cognitive measures of Executive Function.
- A comparison group had been included. This could be either a 'normal', non-clinical or community control, or a clinical comparison group.

The exclusion criteria specified that studies would not be included if:

- They had employed neurophysiological and neuroimaging techniques such as ERP, EEG or fMRI as these were considered to be more related to the domain of neurophysiology.
- They assessed the relationship between psychotherapy or pharmacotherapy and Executive Functioning in adults with ADHD.

1.2.3. Search results

The HDAS search identified 201 publications and the Web of Science search identified 39. Duplicates were removed and abstracts were examined and retained or discarded using the inclusion/exclusion criteria specified. Twenty six studies remained. These papers were read in depth, leading to a further 17 being rejected as they did not meet the inclusion/exclusion criteria. Nine studies remained for inclusion in the review.

1.2.4. Data extraction and quality assessment

Data extraction was informed by the Critical Appraisal Skills Programme (CASP) Tool for Case-Control studies (Public Health Resource Unit (PHRU), 2006). Data were extracted and quality was assessed in respect of whether the study addressed an appropriate and specific research question, the selection and assessment of participants and controls, the identification and management of confounding factors and the reporting of statistical analyses.

1.3. Results

1.3.1. Study characteristics

Initially, demographic and summary information was extracted from the studies (see Table 1.1, Appendix III). The selected studies afforded a relatively broad geographical overview, with two studies conducted in each of the USA (Biederman et al., 2006; Stavro, Ettenhofer & Nigg, 2007), the UK (Bramham et al, 2009; Johnston, Madden, Bramham & Russell, 2011); The Netherlands (Boonstra, Kooij, Oosterlaan, Sergeant & Buitelaar, 2010; In de Braek, Dijkstra & Jolles, 2011) and Argentina (Torralva, Gleichgerricht, Lischinsky, Roca & Manes, 2013; Gonzalez-Gadea et al., 2013); a further study was conducted in Germany (Muller et al., 2007).

Five of the studies stated that they had received ethical approval for their research (Muller et al., 2007; Boonstra et al., 2010; Johnston et al., 2011;

Torralva et al., 2013 and Gonzalez-Gadea et al., 2013). The remaining four were not explicit regarding ethics.

Eight of the papers employed a case-control methodology and one used a multiple case series analysis (Gonzalez-Gadea et al., 2013).

All studies included comparison groups. Five compared adults with ADHD with a non-clinical control (Biederman et al. 2006; Muller et al., 2007; Stavro, et al., 2007; Boonstra, et al., 2010 and Torralva, et al., 2013). Three studies included three comparison conditions: ADHD, Autistic Spectrum Disorder (ASD) or Asperger's Syndrome (AS) and a non-clinical control (Bramham et al., 2009; Johnston, et al., 2011 and Gonzalez-Gadea et al., 2013). One study compared adults with ADHD with a clinical non-ADHD group (In de Braek, et al., 2011).

1.3.2. Recruitment of cases and controls

Recruitment strategies for both cases and controls are a potential source of bias in case-control studies. Careful screening of cases is necessary to ensure that they meet the criteria for caseness (i.e. ADHD). Controls should be screened to ensure that they do not meet caseness criteria (Grimes & Schulz, 2005), and matched with cases for characteristics likely to impact on the results. This may include age, sex and ethnic origin. Additional factors to consider in this review include IQ, educational level and comorbidity which may impact specifically on the relationship between ADHD and EF (Knol, Vandenbroucke, Scott & Egger, 2008).

The Argentinean studies recruited consecutive referrals to a specialist ADHD clinic at the Institute of Cognitive Neurology (INECO) in Buenos Aires. The AS participants were also recruited from INECO (Gonzalez-Gadea et al., 2013). Non-clinical controls for both studies were recruited from a large pool of volunteers (Torralva et al., 2013 and Gonzalez-Gadea et al., 2013). Torralva was cited as third author on the Gonzalez-Gadea et al. (2013) paper, but it was not clear whether the two studies employed the same participants or how ADHD status had been assessed in controls. Gonzalez-Gadea et al. (2013) matched participants for age, sex, handedness, years of education and intellectual level. Participants in the Torralva et al. (2013) study were matched for age, premorbid intellectual performance and on a general cognitive screen. Differences were observed between cases and controls on years of education which may impact on performance of neuropsychological assessment (Rosselli & Ardila, 2003). Two studies recruited ADHD participants through a specialist clinic (Biederman et al. 2006; Muller et al., 2007) and through local advertising (Biederman et al. 2006). The cases in the Muller et al. (2007) study were receiving psychopharmacological treatment of various types and dosages, which is likely to impact on cognitive performance (Gonzalez-Gadea et al., 2013).

Non-clinical controls were recruited by advertising in the community (Boonstra et al., 2010), and/or from employees at the medical institutes where the research was conducted (Biederman et al. 2006; Boonstra et al., 2010). Boonstra et al. (2010) paid control participants for taking part. A

possible disadvantage of this is that participation may be motivated by financial gain rather than interest in the research, potentially resulting in reduced effort during demanding cognitive assessments, although this was protected against by offering to provide a test report to each participant. Stavro et al. (2007) recruited both cases and controls by advertisement in the community. They excluded volunteers from either group with a history of head injury, neurological illness, or currently prescribed anti depressant, anti convulsant or antipsychotic medications, to prevent possible confounding effects. Two remaining studies recruited non-clinical controls from local community research volunteers (Johnston et al., 2011) or from a departmental volunteer panel (Bramham et al., 2009). Recruitment of volunteers from the local community can protect against confounding influences such as socioeconomic status. However, inbuilt bias related to the characteristics of people who volunteer as controls, (e.g. student population, intellectual level, etc.) may be evident.

In de Braek et al (2011) recruited cases and controls from referrals to an ADHD clinic. Each had at least one symptom of ADHD. Differences between cases and controls on self-rating scales for number of attention deficit criteria and hyperactivity/impulsivity in adulthood did not differ significantly. This raises doubt regarding the appropriate categorisation and the degree of difference between cases and controls, which may have impacted study findings. Only two of the studies discussed the total number of potential participants screened and selected (Stavro et al., 2007; Boonstra et al., 2010).

1.3.3. Measurement of Executive Function domains

Studies assessed specific domains of Executive Functioning using a variety of measures. The main domains considered reflected those defined by Pennington and Ozonoff (1996) and included:

- set-shifting, which relates to the ability to rapidly switch focus in response to changing goals (Jurado & Rosselli, (2007)
- planning, goal setting and problem solving
- working memory, which is the ability to temporarily retain information whilst using that information to learn, understand, problem solve and act on goals (Baddeley & Logie, 1999)
- response inhibition, which is the ability to suppress inappropriate responses to situation or context and thus enable appropriately goal-directed and flexible behaviours (Verbruggen & Logan, 2009)
- verbal fluency.

The measures used in each study are listed in Table 1.2 (see Appendix III). A brief summary of EF measures used may be found in Appendix IV.

Measuring EF is a complex issue (Burgess, 2010) and most EF tests have been developed and validated on their ability to identify frontal lobe impairment (Jurado & Rosselli, 2007). It has been suggested that it is difficult to differentiate between EF and non-EF tasks, as in order for a task to tap in to EFs, it would require controlled rather than automatic responses. Different elements of a particular task may require both EF and non-EF abilities

(Hughes & Graham, 2002) and domains of EF may be difficult to define and operationalise and are likely to overlap resulting in each task measuring more than one domain of EF. This is problematic when measurement of a specific EF domain is required (Hughes & Graham, 2002).

Neuropsychological tests have been criticised on the grounds that they do not reflect real-life situations and therefore compromise ecological validity. This is partly due to the nature of the tasks, and partly due to the circumstances under which assessment is performed. Cognitive assessment is usually carried out in a quiet environment with minimal distracters, which is likely to mediate the impact of cognitive deficits (Young & Bramham, 2007).

1.3.4. Statistical analysis

All studies reported probability values and three studies gave effect sizes, (Biederman et al., 2006; Muller et al., 2007; Gonzalez-Gadea et al., 2013). None of the studies reported confidence intervals or power calculations. However, Biederman et al. (2006) and Gonzalez-Gadea et al. (2013) discussed that their analyses had limited statistical power.

1.3.5. Findings

Results of the studies are summarised in table 1.1 (see Appendix III) and described here.

The main findings suggest that EF deficits in adults with ADHD are consistent with those found in children (Bramham et al., 2009) and that more

EF difficulties were prevalent in ADHD groups than non-ADHD group (In de Braek et al., 2011).

All studies found some evidence of EF deficits in adults with ADHD. Muller et al., (2007) compared participants with ADHD who were currently on medication to non-clinical controls, and observed deficits in set-shifting, divided attention, verbal and visual memory and visuo-motor processing speed. Response Inhibition was less affected in comparison to the control group. The ADHD group in this study showed elevated anxiety and depression scores, and these were controlled for in the analysis.

Torralva et al. (2013) separated ADHD participants into two groups for analysis of results. The Lo-ADHD group were people who scored one and a half or more standard deviations below normalised scores on any of the standardised tests in the neuropsychological battery. Those with a higher functioning neuropsychological profile were classed as Hi-ADHD. Significant differences were observed between the Lo-ADHD group and both the Hi-ADHD and controls on the Trail-Making Test Part B and the letters and numbers ordering task. On the Hotel task, a highly demanding and ecologically valid EF exercise, the non-clinical control group scores were significantly higher than both Hi-ADHD and Lo-ADHD groups for the number of tasks attempted and the number of tasks correctly completed. There was no significant difference between the Hi and Lo ADHD groups on these tasks. The same pattern of results was seen on working memory scores of correct responses, omission errors and commission errors. Torralva et al.

(2013) concluded that by using more demanding and ecologically valid measures of EF, they were able to detect EF deficits in adults with ADHD who had achieved normal performance (i.e. shown no deficits) with traditional neuropsychological tests of EF. This suggests that discrepancies in EF abilities may be related to test validity and specificity.

Two studies specifically considered the functional impact of EF deficits and found that inattentive-disorganised symptoms are likely to be the main factor leading to deficits in adaptive ability (Stavro et al., 2007; Biederman et al., 2006). Biederman et al. (2006) compared results across four groups. These were ADHD with EF deficits, ADHD without EF deficits, non-ADHD with EF deficits and non-ADHD without EF deficits. Their findings were both complex and interesting. They found that participants with ADHD were significantly more likely to have EF deficits than non-ADHD participants. Those with both ADHD and EF deficits were significantly more likely to experience functional impairment in relation to education and occupation, socio-economic status, social abilities and leisure pursuits. They also found that psychometrically observed EF deficits may help to identify those at risk of underachieving in these areas. The findings suggest that EF deficits are likely to impact on some areas, particularly education irrespective of ADHD.

Stavro et al. (2007) reported findings after covariance for IQ, gender and education had been taken into account. They suggest that deficits in EF are associated with poorer adaptive functioning. A strong correlation was found between hyperactive-impulsive and inattentive-disorganised subtypes of

ADHD and both subtypes were linked with deficits in EF. The inattentive-disorganised subtype accounted for far more of the variance in adaptive functioning than did the hyperactive-impulsive subtype. Contrary to the findings of Biederman et al. (2006), these authors note that EF did not predict impairment independently of ADHD (Stavro et al., 2007).

Boonstra et al. (2010) found that deficits in response inhibition were the only robust finding between medication naive adults with ADHD and non-clinical controls after controlling for IQ and non-EF demands. This is in contrast to Muller's findings. Differences in other domains of EF disappeared after controlling for IQ and non-EF. A significant difference was found between groups on the Change Response of the Change Task, which is a set-shifting task. However, after further examination, it appeared that the task required inhibition to be exercised prior to set-shifting (Boonstra et al., 2010). Miyake et al (2000) have suggested that inhibition is common to successful performance on all EF tasks, which may impact considerably on the performance of adults with ADHD. Boonstra et al. (2010) found no significant differences between an ADHD and non-clinical control group on verbal and non-verbal fluency tasks, a planning task or an ongoing response inhibition task. They conclude by stressing the importance of controlling for factors such as non-EF abilities and IQ as some of their results showed a significant difference prior to controlling for these variables. They suggest that their results support the hypothesis that ADHD is a disorder of self-regulation rather than a disorder of attention and hyperactivity (Boonstra et al., 2010).

In de Braek et al. (2011) found that the ADHD group reported more EF related problems than the control group and made more errors on a verbal learning task. The performance of the two groups on verbal learning capacity did not differ, which suggests that the deficits observed in the ADHD group were related to the self-monitoring aspect of the task. No significant difference was found between groups on the Stroop test or in respect of attention or hyperactivity. In de Braek et al., (2011) concluded that ADHD could be considered a syndrome of Executive dysfunction. Although classification of cases and controls in this study appeared to involve fairly rigorous assessment, diagnostic criteria for ADHD had been modified to require five rather than six DSM-IV items and the control group consisted of referrals to the clinic who were also exhibiting symptoms of ADHD but who had not met diagnostic criteria.

1.3.6. Comparison of ADHD and ASD

Bramham et al. (2009) compared adults with ADHD and ASD. They found that EF deficits were a feature of both conditions. They suggested that ADHD was related specifically to impulsivity or deficits in response inhibition, whereas the ASD group had difficulty with initiation, planning and strategy formation. This was evidenced by the finding that the ADHD group showed a significantly shorter planning time than either the ASD group or the non-clinical control group. No differences were found between groups in accuracy measures or time taken to complete the task. This suggests that although the ADHD group started sooner, they took longer to execute the task, and

indicates that planning took place during rather than prior to starting the task (Bramham et al., 2009).

Participants with ADHD scored significantly poorer than the ASD group on the repetition score of the Verbal Fluency test. They showed increased repetitions and demonstrated a borderline significant deficit on this measure in comparison to the non-clinical group. Bramham et al. (2009) concluded that EF measures may be used to differentiate between ADHD and ASD and that EF difficulties in both conditions appear to remain similar across the lifespan. They also suggest that the ASD and ADHD groups were broadly similar in all other areas of cognitive functioning (Bramham et al., 2009).

The findings of Johnston et al. (2011) were that the ADHD group were faster, but less accurate than either the ASD or non-clinical control groups on the Stroop Colour-Word task, and faster than the ASD group but not controls on the Matching Familiar Figures Test. These results suggest that the ADHD group showed greater impulsivity and less inhibition and reflectiveness than the other two groups. The authors found correlations between verbal IQ and task performance on several of the measures used in the study. They suggest that this highlights the impact of verbal ability on the performance of many neuropsychological measures. They also consider the possibility that EF tests which are thought to measure the same domain, may in fact be measuring a different aspect of EF. For example they suggest that the Stroop test requires inhibition of response selection, whereas the Stop Task would require inhibition of response execution (Johnston et al., 2011).

Gonzalez-Gadea et al. (2013) found that participants in the ADHD group showed significantly poorer performance than both the AS group and the non-clinical control group on the working memory tests of digit span backwards and the letters and numbers task. They found no significant difference between groups on tests of cognitive flexibility: the Wisconsin Card Sorting Task or the Trail-Making Test Part B. They suggest that there is considerable overlap in the cognitive profiles of ADHD and AS in the fact that variability in EF performance is common to both disorders. They advise that in future, clinical interventions for people affected by these conditions need to be assessed and developed on an individual basis.

1.4. Critical Appraisal

1.4.1. Methodology

All of the studies discussed the research aims or hypotheses. All studies employed an observational methodology which was conceptually similar to case-control studies. This methodology is frequently employed in epidemiological research in which the aim is to look at specific patterns, causes or outcomes in relation to health and disease in a particular population (Bowling, 1997). Case-control compares groups with a condition (cases) to those without the condition (controls). In this review, the target condition was ADHD. The cases and controls were compared on particular outcome measures (Dempster, 2011) which in this review involved measures of Executive Functioning. Case-control has the advantage of being a relatively efficient methodology in respect of cost, effort and time needed to

complete the study. However, this method presents two main sources of bias which are selection bias and information bias (Lee et al., 2007). The quality of the research is dependent to a large extent on how well these two areas of bias have been addressed.

1.4.2. Determining cases and controls

An important consideration in this review where differences in ADHD and non-ADHD groups are being considered is that the cases and controls need to have been adequately defined and differentiated.

All studies reported multiple assessment methods of participants with ADHD. These included psychiatric assessment, Structured Clinical Interview for DSM-IV (SCID) and Questionnaires and Rating Scales, and both self and informant report for current and childhood symptoms. The DSM-IV criterion was modified in some of the studies (See Table 1.3 in Appendix III, for a summary of diagnostic assessment & matching factors/potential confounds).

As participants in all studies were subjected to thorough assessment as part of the recruitment process this would, in effect, qualify them as incident cases. Incident (new) cases are considered to be more reliable than prevalent (both new and old cases) cases as new diagnoses, performed by the same people and using similar criteria are likely to be more consistent than historical diagnoses (Schulz & Grimes, 2002).

In the study by In de Braek et al., 2011, the differences between cases and controls on self-rating scales for number of attention deficit criteria and hyperactivity/impulsivity in adulthood did not differ significantly. The selection of controls is particularly important in case-control studies as they need to be representative of the cases in as many aspects as possible with the exception of the condition under investigation. The studies which selected their controls from people who had been referred to specialist ADHD clinics, but who had not been diagnosed with the condition, are at risk of biased findings as there may be insufficient differences between cases and controls (Schulz & Grimes, 2002).

1.4.3. Potential moderating and confounding factors

To ensure that differences in Executive Functioning are related to ADHD, it is important to reduce the effect of potential moderating variables. Cases and controls should be matched on as many variables as possible, especially those which are likely to impact on Executive Functioning. Matching will increase the probability that EF differences observed between the groups are due to ADHD and not other factors such as differences in IQ. In this review, all studies compared participants for gender and age. Some studies used SCID to rule out or account for other psychiatric disorders and some also accounted for neurological conditions such as brain injury or epilepsy or physical or sensory disabilities which may impact on the participant's ability to complete the test batteries. Most studies also considered cognitive ability and set criteria for level of IQ below which participants would be excluded. The exceptions to this were In de Braek et al., (2011) where IQ was

estimated, but no level for exclusion was discussed and Torralva et al., (2013) and Gonzalez-Gadea et al., (2013) who did not estimate or measure IQ. Where IQ level was set as an exclusion criteria, studies varied slightly from exclusion if IQ was below 70 (Bramham et al., 2009 and Boonstra et al., 2010; to exclusion if IQ was below 80 (Biederman et al., 2006 and Johnston et al., 2011). Stavro et al. (2007) excluded participants with an IQ below 75.

Case-control studies are not as stringent as Randomised Controlled Trials as participants cannot be randomised to conditions. However, when cases and controls are 'matched' on certain variables the credibility and quality of the research is likely to be improved (Wacholder, Silverman, McLaughlin & Mandel, 1992; Bowling, 1997), Matching on particular extraneous variables such as age, gender, level of education and level of intelligence means that these variables are less likely to account for any differences found between the groups. The studies in this review considered various potential confounding variables.

Pharmacological factors are likely to impact on performance on tests of Executive Function (Kempton et al., 1999; Advokat, 2010) and may, therefore, confound results. Three of the studies reported that their participants were not on medication for ADHD (Boonstra et al., 2010; In de Braek et al., 2011 and Torralva et al., 2013). Three studies reported that participants had undergone medication washout for 48 hours (Bramham et al., 2009 and Johnston et al., 2011), and Stavro et al.(2007) reported that participants had been off medication for between 18 and 184 hours prior to assessment. In the remaining three studies, participants who were on

medication, continued to take it throughout the study (Biederman et al., 2006; Muller et al., 2007; Gonzalez-Gadea et al., 2013).

1.4.4. Limitations of review

This review is limited in that it considered the findings of studies from peer reviewed journals only. It was also restricted to consideration of outcomes of cognitive assessment. New technologies are providing an increasing evidence base around the relationship between EF and ADHD and this was not explored in this review. The rationale for these restrictions is related to relevance to clinical practice and constraints of time and resources. The limited number of studies in the review may limit the implications of the findings. However, the restrictions may also serve to focus the review in terms of both breadth of topic and quality of the research included.

1.4.5. Clinical implications

An understanding of the processes underlying ADHD will enable the most efficient development of interventions to support people with this condition. This review has identified a number of EF domains that appear to be implicated in the functional difficulties experienced by adults with ADHD. Specifically, areas related to response inhibition, set-shifting and working memory have been identified, though there is some contradiction in these findings, which may be due to the use of different EF measures. Of particular interest is the finding that deficits in EF were observed on more ecologically valid or highly demanding tasks despite some participants performing within

the normal range on more traditional neuropsychological tests of EF (Torralva et al., 2013). This is an important consideration as it suggests that some EF deficits may be missed with the result that individuals may not receive the support they need.

In order to obtain a more reliable and valid estimation of the clients' abilities, clinicians should carefully consider the method of EF assessment, the assessment tools used and the context in which assessment is conducted. A small number of assessment tools which have more ecological validity are currently available, including the Executive Secretarial Task (Lamberts, Evans & Spikman, 2010) and the Behavioural Assessment of the Dysexecutive Syndrome (BADS) (Norris & Tate, 2000).

Improved assessment techniques will enable clinicians to identify clients whose EF difficulties may avoid detection with current methods. Better detection of EF difficulties will enable clients to access appropriate interventions and may help clinicians to tailor interventions more specifically to the individual's needs.

1.4.6. Implications for future research

The results of this review suggest that there is evidence for EF deficits in adults with ADHD. However, the exact role remains unclear. A number of areas have been identified for further research. It is clear that further development of EF measures is needed and that these measures would need to be more ecologically valid than the neuropsychological tests

currently used. In addition, further consideration should be given to the context in which assessment of EF takes place. Usually assessment is performed in a quiet space with limited distractions to enable optimum performance. It would be interesting to study performance on EF measures under different environmental conditions to assess the impact of the normal distractions of everyday activities.

Development of appropriate diagnostic criteria for adult ADHD is necessary. This is a matter of clinical and ethical importance in order to avoid both under diagnosis leading to missed opportunities for support and treatment or incorrect diagnosis leading to inappropriate treatment and medication. The recently published DSM-V (2013) has been changed in an effort to address this issue.

It has been suggested that the cognitive profile of people with different subtypes of ADHD may vary and that this may explain some of the inconsistencies in findings within the literature (McLean et al., 2004). A comparison of the cognitive abilities of people with different ADHD subtypes may be important in developing further understanding of the cognitive processes involved in ADHD.

Conditions such as schizophrenia and depression share some corresponding symptoms and neuropsychological similarities with ADHD, such as involvement of the frontal areas of the brain (Boonstra et al., 2005).

Comparison of adults with ADHD and other clinical conditions may lead to

more objective differentiation of the difficulties underlying these conditions and facilitate the development of more specific interventions.

More generally, there are areas of ADHD in adults that have yet to be explored. Much information relating to adult ADHD is anecdotal. Few empirical qualitative studies are available and the impact of having ADHD on day-to-day life from the perspective of adults with the condition does not appear to have been addressed. Past research has shown that there can be disparity between the individuals' personal experiences of their condition and health professionals' perceptions of the condition (Cornford, Hill & Reilly, 2007). This may impact on the development and implementation of appropriate support and intervention. Therefore, further research is required to ascertain the impact of ADHD from the perspective of adults with the condition.

1.5. Conclusion

This review was conducted with the aim of determining the state of current knowledge regarding the association between EF and ADHD in adults. The results suggest that adults with ADHD are likely to exhibit deficits in EF mainly related to response inhibition, set-shifting or working memory. Deficits in EF as shown on neuropsychological tests may help to identify people who are at risk of under achieving in various life domains such as education or occupation. Some EF deficits may not be picked up by neuropsychological testing, though they may be observed on more ecologically valid or highly demanding tasks. More work is required to

develop this area. Additionally, there is some evidence that the EF profile as revealed by neuropsychological testing may provide a means by which certain developmental conditions such as ADHD and ASD may be differentiated.

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(* Indicates reference can be found in Appendix IV – Summary of EF Measures)

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Chapter 2: Research report

Adults' Experiences of Having Attention Deficit Hyperactivity Disorder (ADHD): A Qualitative Study Using Interpretative Phenomenological Analysis

This chapter will be submitted to the British Journal of Psychology (see Appendix IX for author guidelines).

Abstract

With increasing awareness of Attention Deficit Hyperactivity Disorder (ADHD) in adults, it is important to develop an understanding of the experience of those living with the condition in order to inform intervention and service development. Data from interviews with five participants were analysed using Interpretative Phenomenological Analysis (IPA). Four super-ordinate themes emerged from the analysis including: 'Process of adapting to ADHD', 'Social appraisal', 'Self-regulation' and 'Coping'. Participants described an adjustment process which impacted on their identity. ADHD was not understood well by others and some participants experienced stigma and bullying. The impact on self-perception was evident and a range of coping strategies were identified.

2.1. Introduction

Attention-Deficit/Hyperactivity Disorder (ADHD) is a 'heterogeneous behavioural syndrome characterised by the core symptoms of hyperactivity, impulsivity and inattention' (National Institute for Health and Care Excellence, (NICE; 2008, p. 4). The following Diagnostic and Statistical Manual - IV (DSM-IV) criteria need to be met for diagnosis of ADHD:

- Inattention and/or hyperactivity-impulsivity which is more frequent and severe than is typical for individuals at a comparable level of development.
- Some symptoms must have been present before seven years of age.
- Some impairment from the symptoms must be present in at least two settings.
- There is evidence of interference with developmentally appropriate social, academic or occupational functioning. The disturbance does not occur exclusively during the course of other disorders and is not better accounted for by another mental disorder.

(DSM-IV, 2000)

ADHD affects up to five percent of children (Faraone, Sergeant, Gillberg & Biederman, 2003) and may continue into adulthood for up to 65% of those affected (Faraone, Biederman & Mick, 2006). However, estimates differ

based on factors such as ADHD definition, symptoms and assessment criteria (Mannuzza, Klein & Moulton (2003).

Proponents of the fronto-cortical network dysfunction model hypothesise that ADHD results from or is linked to deficits in Executive Functioning (EF).

Executive functions operate to organise the higher order cognitive processes that enable learning, forethought, vigilance and self-control and facilitate adaptation and functioning in daily life (Barkley, 1997). EF relates to classes of behaviour including the ability to:

- Initiate and stop actions
- Monitor and change behaviour
- Plan future behaviour
- Anticipate outcomes and adapt to changing situations
- Form concepts and think abstractly

(Gurd, Kischka and Marshall, 2010)

In adulthood, the impact of EF deficits, for example, on planning, monitoring, and attention regulation, are exacerbated by increasing functional demands, a combination of environmental, cultural and social interaction, and increasing co-morbidity with disorders such as anxiety and depression (Schmidt & Petermann, 2009).

Despite evidence that the same neurobiological model of fronto-cortical network dysfunction underpins ADHD across the life course, difficulties may manifest differently in adults (Cubillo, Halari, Smith, Taylor & Rubia, 2012).

For example, hyperactivity may present as excessive talkativeness or workaholism (Weiss & Weiss, 2004) and symptoms may not be overtly expressed, but may manifest as functional difficulties, such as the need for increased effort and energy in order to complete tasks (Asherson et al., 2012). Misdiagnosis may occur as symptoms can be mistaken for mood or personality disorders, behavioural or learning difficulties. Furthermore, symptoms may result in individuals being judged as 'lazy' or 'unmotivated' (Asherson et al.; 2012; Kooij et al., 2010).

A number of more subjective experiences are also associated with ADHD including sleep difficulties, an inability to relax, mood instability, and exhaustion. Frustration and distress are likely to occur in relation to mental and physical restlessness and the constant effort to focus and regulate thoughts, attention and organisational ability (Asherson et al. (2012).

ADHD is likely to impact and present challenges throughout the life course and across many domains such as education, work and relationships (Brod, Schmitt, Goodwin, Hodgkiss & Niebler, 2012; Lensing, Zeiner, Sandvik & Opjordsmoen, 2013). It is, therefore, important for the individual to be able to adapt and cope with the condition to the best of their ability. This may require input throughout the lifespan from Education and Mental Health Services. The role of Clinical Psychology in supporting individuals with ADHD would include psycho-education, skills training, such as social and time-management skills and therapeutic interventions either on a individual or

group basis, to manage mood disorders, anxiety, low self-esteem and other co-morbid conditions.

Clinicians and researchers are increasingly aware of the ethical and evidence-based value of incorporating the experience of service users into the knowledge base (Altschuler, 1997). For example, evidence indicates that service-user involvement can reduce patient-rated unmet need and improve service users' satisfaction with services, as well as their subjective ratings of Quality of Life (Thornicroft & Tansella, 2005). Indeed, NICE (2008) recommends service user involvement when developing services for adults with ADHD.

Furthermore, research has shown that there can be disparity between service users' experiences of their condition and health professionals' perceptions and understanding of it, even in frequently occurring conditions such as depression (Cornford, Hill & Reilly, 2007). Close examination of service users' views and perspectives, and the centrality of these views to strategic planning and service development, will ensure that the most relevant, meaningful, responsive and effective, person-centred service is provided.

Most research into adult ADHD has used quantitative methodology and there is a paucity of qualitative insights into the experience of living with ADHD. This may result from the relative lack of understanding and experience of qualitative methodology outside of the Social Sciences. It has been

suggested that qualitative research methods deserve to be an essential component in health and health services research (Pope & Mays, 1995).

Of the qualitative evidence available, one study considered the burden of ADHD and its impact on quality of life in older adults. A Grounded Theory approach revealed a cumulative negative impact of ADHD on professional, financial, social and psychological well-being, resulting from comparative underachievement (Brod, et al., 2012). Another study used Interpretative Phenomenological Analysis (IPA) to explore the experiences of eight adults following diagnosis and treatment for ADHD. Results highlighted the intense psychological impact of diagnosis and treatment which reflected the process of psychological adjustment. Experiences varied between relief, turmoil, rumination and acceptance throughout the adjustment process. Findings suggested that participants experienced a six-stage process of emotional adjustment, culminating in an understanding of the need for development of more adaptive coping styles such as positive reappraisal of stressful situations (Young, Bramham, Gray and Rose, 2008).

As knowledge and awareness increase, the number of adults receiving a diagnosis of ADHD is likely to rise, which could have a considerable impact on Mental Health Services (Kooij et al., 2012). It is, therefore, appropriate and timely to develop a more thorough understanding of the implications of ADHD for those affected. This will ensure that service provision is effective in enabling adults with ADHD to develop the knowledge and skills needed to negotiate the life-long challenges of the condition.

The aim of this research is to explore the experience of ADHD on the daily lives of adults and to investigate participants' attitudes and preferences regarding support in order to inform future clinical psychology practice.

2.2. Method

2.2.1. Design

A qualitative design utilising Interpretative Phenomenological Analysis (IPA) (Smith, 1996) was used. IPA lends itself particularly well to psychological research as it is concerned with the way that individuals construct or come to understand their experiences. Originally developed within a Health Psychology context, IPA allows exploration of idiographic, subjective experience and the processes by which individuals make sense of and develop meaning in respect of their experiences, thus allowing context and complexity to be taken into account. It is an inductive, or 'bottom-up' process that reduces the impact of pre-conceived assumptions on the research process (Brocki & Wearden, 2006).

IPA is used to examine divergence and convergence in relation to specific phenomena in a small population. In contrast, Discourse Analysis considers the construction of social meaning through the use of language rather than through the cognitive meaning the language portrays (Chapman & Smith, 2002). Grounded Theory seeks to establish explanatory theoretical insight of social processes within the broader population, rather than an understanding

of the essence of personal experience (Brocki & Wearden, 2006; Starks & Trinidad, 2007).

IPA utilises a form of thematic analysis as it identifies patterns of meaning across participants. However, IPA differs from thematic analysis in that it has a theoretical foundation in phenomenology and hermeneutics (Todorova, 2011) and is concerned with the unique characteristics of individual participants (Braun & Clarke, 2006).

In this study, IPA was utilised to enable an understanding of participants' experiences of daily life in the context of having ADHD. Participants were interviewed, and their subjective experiences of events were interpreted and analysed in order to produce a narrative account which is illustrated and supported by verbatim quotes.

2.2.2. Theoretical background

IPA has its roots in a number of theoretical perspectives. It is concerned with phenomenology or the study of specific experiences or events, symbolic-interactionism, or the meaning people make of those experiences and hermeneutics which is concerned with accessing meaning through the process of interpretation (Biggerstaff & Thompson, 2005). Thus, IPA considers subjective experience and the meaning this holds for participants (Smith & Eatough, 2007).

Its focus is the connection between cognitive, emotional and physical states and the complicated ways that people talk about and make sense of these experiences (Smith & Osborn, 2003). At the same time, IPA acknowledges that these experiences and meanings are accessed through the researcher's interpretations (Willig, 2008). The process, whereby participants' interpretations of phenomena are interpreted by the researcher is referred to as the double hermeneutic.

2.2.3. Position of researcher

The researcher's epistemological position is situated between critical realism and social constructivism. The critical realist approach relates to the idea that the truth is 'out there' but will be modified by the research process due to the interpretations and biases of the researcher. The social constructivist approach relates to the idea that each individual has their own version of 'truth' which is constructed through their interaction with the world (Dempster, 2011). IPA may be positioned between these two approaches by its acknowledgement of the double hermeneutic (Smith & Osborn, 2003). That is to say that IPA acknowledges the researcher's role in the interpretation of the participant's interpretation of their experience.

Whilst not rejecting other epistemological positions or research methodologies, the use of IPA in this study has enabled the development of an enhanced understanding derived from the idiographic examination of experience. The researcher considers this to be a key component for the

development of psychological understanding and, consequently, effective interventions and services.

The Principal Investigator (PI) has worked therapeutically with an adult with ADHD in a secondary care mental health service and had some prior insight into the potential issues related to the condition and the distress this can entail. The experience motivated the PI to develop a deeper understanding of adult ADHD in order to better inform service development and, thus, alleviate distress. To increase awareness of previous perceptions and understanding of ADHD, the researcher kept a reflective diary and sought supervision throughout to ensure that interpretation had been grounded in the data.

2.2.4. Participants

2.2.4.1. Rationale for recruitment strategy

A purposive and homogenous sample is required in IPA to ensure that the phenomenon under investigation is of significance to the participants (Smith & Osborn, 2003). There are no definitive guidelines regarding the number of participants required for an IPA study. However, sufficient cases are advised to enable similarities and differences to be examined, but not so many that an in depth analysis of the data is precluded (Smith & Eatough, 2007). This study was restricted by a limited timescale and, therefore, a relatively small sample size was considered acceptable to enable a sufficiently rich and in depth analysis of participants' accounts (Smith & Eatough, 2007).

Five participants; three men and two women were recruited. Two through university student support and three through a request for participants on a postgraduate psychology email forum (PsyPAG), which is frequently used to recruit research participants. Inclusion and exclusion criteria were as follows:

Inclusion criteria:

- aged 18 or over.
- English speaking.
- having a diagnosis of ADHD.

Exclusion criteria:

- under the age of 18.
- no official diagnosis of ADHD.
- adults unable to provide informed consent.
- adults who fulfil the inclusion criteria but who would find it very difficult to communicate because of learning difficulties or inability to speak English.

Participants' ages ranged between 24 and 35 years. Three were British and two were Canadian. Three were married or in long-term relationships. Three were employed on a full or part-time basis and four were currently working towards a degree level qualification. One participant had completed a degree.

2.2.5. Interview guide

An interview guide informed by previous literature was developed (see Appendix V) . The aim of the guide was to facilitate discussion from which rich, detailed accounts of participants' idiographic experiences could be obtained. Broad open questions were included related to the experience of having ADHD and support preferences. A number of potential prompts were included to encourage discussion should this be necessary.

2.2.6. Procedure

An email invitation was sent out by University Student Support Services and a message was posted on the PsyPAG email forum giving details of the study and requesting participants.

Potential participants then contacted the researcher directly by email. A Participant Information Sheet (see Appendix VI) was forwarded and participants were contacted by the PI after approximately two weeks to ask if they were interested in taking part in the research. A meeting was arranged at a convenient location for them and at a mutually agreed time and date.

All interviews were conducted by the PI (JB). A quiet, relatively private location was sourced for each interview. Two interviews were conducted on university premises. Three were conducted in the participants' homes and NHS Lone Worker Policy was observed.

At the meeting, the participant information was discussed, drawing particular attention to anonymity and withdrawal from the research. An opportunity for further questions was given. Each participant completed a consent form prior to interview (see Appendix VII), which was recorded on a Sony ICD-PX820 Digital Recorder. The length of the interviews ranged from 58 to 96 minutes. Initially, demographic details were obtained before participants were invited to talk about their experience of having ADHD.

Following the interview, participants were offered a chance to debrief. They were asked how they had found the interview and were given the opportunity to discuss any matters arising.

Interviews were transcribed verbatim by the researcher and pseudonyms were assigned to each participant to protect anonymity.

2.2.7. Ethics

Ethical approval for this study was obtained from the NHS Health Research Authority, NRES Committee South Central - Berkshire B (see Appendix VIII).

2.2.8. Data analysis

The process of IPA may vary. Analysis in this study followed the guidance of Smith & Osborn, (2003), Smith & Eatough, (2007), and Smith, Flowers & Larkin (2009) and consisted of a detailed idiographic examination of participants' experiences of being an adult with ADHD. Initially, a thorough, line-by-line coding of the first transcript was undertaken. The transcript was

re-read several times in order to gain familiarity with the material and a holistic perspective of the account (Smith & Eatough, 2007). Comments and annotations describing points of interest and significance; comments on use of language, contradictions and convergences; and more conceptual, interpretative comments, were recorded in the right hand margin of the transcript (Smith, Flowers & Larkin, 2009). The comments and annotations were then utilised to develop phrases and potential theme titles, and these were written in the left hand margin. The aim of this process is to capture the essence of the meaning within the text as interpreted by the researcher and to develop connections between the text and more abstract psychological concepts (Smith & Osborn, 2003). Themes were identified and clustered to form coherent categories. This process was repeated with each transcript. Transcripts were then compared and descriptive themes that were common to them were further clustered to make subordinate themes, at which point, the theme labels moved from being descriptive to interpretative. Further interpretative super-ordinate themes were then developed inductively from the subordinate themes. At all stages, the iterative process was utilised to ensure that the concepts made sense in the context of, and had been derived from, the original data. Use of supervision and a reflective diary supported the hermeneutic process and helped to monitor the quality of the analysis. The supervisor provided validity checks by examining excerpts from the transcripts and analysis.

Finally, a written account was produced to explore and discuss the themes and relate the analysis to existing literature (Smith & Osborn, 2003). Extracts

from the original transcripts were utilised to illustrate and support the analysis. Themes were tabulated for the purpose of clarity (see Table 2.1 below and Appendix III, Table 2.2).

2.3. Results and Discussion

An overarching theme related to a process of adjustment to the difficulties experienced by adults with ADHD emerged from the analysis. This was represented by four super-ordinate themes which also considered

Super-ordinate themes	Sub-ordinate themes
Process of adjustment to ADHD	The comparative self Dialectic of diagnosis The reflected self Loss and mourning of the potential self Self growth Integrated self Denial and distancing
Social appraisal	Trivialising ADHD Stigma, labelling and bullying
Self-regulation	Attention regulation difficulties Executive difficulties and social orientation Impact on learning
Coping	Managing strengths and developing resilience Developing new perspectives Contextual barriers

Table 2.1: Super-ordinate and sub-ordinate themes

moderating and mediating influences on the experience of having ADHD and the adjustment process. Themes were: 'Process of adjustment to ADHD', 'Social Appraisal', 'Self-Regulation' and 'Coping. Within each super-ordinate theme, a number of sub-ordinate themes were identified (see Table 2.1 above).

2.3.1. Process of adjustment to ADHD

A number of issues discussed by participants were interpreted as aspects of adjustment related to having ADHD. Adjustment is a process which enables effective functioning and maintenance of psychological and social wellbeing (Livneh & Antonak, 1997). Within this super-ordinate theme, several sub-themes were identified showing a number of similarities and contradictions between accounts. Issues of identity were intrinsic to many of the sub-themes related to adjustment.

2.3.1.1. The comparative self

This sub-theme examines how participants perceived themselves in relation to their peers. A comparative process began in childhood and appeared to be reflected on and modified over time. Some participants perceived themselves to be different from their peers.

'I was the weird kid who didn't really fit in any of the cliques...I was frequently bullied and lacked social graces and social skills... I was in therapy for depression for quite some time as a result of my trouble with social development,' Will 130-134

As a child, Will perceived that he 'didn't fit' with his peers and this led to him being bullied. These difficulties resulted in the need for support with his psychological wellbeing. In contrast, Kate was unaware of any differences between herself and her peers.

'I just thought that's just normal but it's not, apparently' Kate 158-159

Kate only became aware of her differences following her ADHD diagnosis. Her use of the word 'apparently' seems to suggest that she doubts her behaviour differs substantially from that of others.

Social comparison theory proposes that there is a human drive to assess one's opinions and abilities, and to compare self with others (Festinger, 1954). Self-concept is influenced by experiences related to success and failure and the sense of competence or incompetence experienced as a result (Schaffer, 1996). When ability is assessed as low, feelings of failure and inadequacy often result (Festinger, 1954).

Self-concept impacts on the individual's personal goals, choices and perception of others' intentions towards the self (Wright, 1983). The foundations of self-concept develop during childhood, which renders the individual particularly vulnerable to the evaluations of others at that time. Younger children tend to evaluate concepts in simple two dimensional terms such as 'clever' or 'stupid', and are unable to moderate their view by

considering circumstances or context (Schaffer, 1996). This may have contributed to the low self-esteem and negative self concepts experienced by some participants, which had persisted to a degree into adulthood.

2.3.1.2. Dialectic of diagnosis

Receiving a diagnosis of ADHD presented contradictory impacts and meanings for participants. Impact of diagnosis appeared to differ depending on age at time of diagnosis. One participant diagnosed as a child reported very little impact.

'the only thing for me was that I had to take a tablet once a day at dinnertime' Hannah 89-93

Participants who learned of their ADHD as adults appeared to experience a much greater emotional impact.

'It was quite shocking at first because my first perceptions before looking into ADHD was naughty little school children' Martin 51-54

Preconceptions about ADHD impacted on the meaning and emotional response to the diagnosis. ADHD is more commonly understood as a childhood condition, being recognised in adults more recently. Martin expressed shock at being identified with a condition that for him meant 'naughty child'. Kate was also diagnosed as an adult. Her friends had often

joked that she was 'hyperactive' and her partner had noticed that Kate exhibited symptoms of ADHD. On confirmation that she had the condition, Kate experienced a range of contradictory emotions.

' I had mixed feelings I was kind of really relieved because I was like finally! And then I was quite upset by it and then I was like no I don't want it... but now I am just pleased that I can kind of label it... it's not back to me as a person it's because of ADHD which is a massive thing...' Kate 290-298

Although she was relieved to finally know that there was an explanation for her difficulties and that these were not due to negative qualities about herself as a person, Kate also felt upset by and wanted to reject the diagnosis.

Response to the diagnosis of a long-term condition may be compared to the threat response in that the situation will be appraised, an emotional response is likely to ensue and coping strategies will be developed in order to deal with the perceived threat (Bennett, 2000). A sense of threat may result from the realisation that the condition will require management on a lifelong basis, threaten the sense of identity and impact on future goals and aspirations (Moos & Schaefer, 1984).

2.3.1.3. The reflected self

Some participants reported a process of self-reflection which enabled them to develop an understanding of themselves in the context of having ADHD.

Hannah was diagnosed as a child, but began to reflect more on her condition as she grew older.

' I think when I was 16 ... I began to really think about the fact that I had ADHD and I began to research it online because I wanted to know more about it and what parts of me it affected.' Hannah 409-412

As a child, the full meaning of having ADHD may not have been obvious. Research leading to greater understanding of the impact of the condition appeared to be part of a developmental and maturation process for Hannah. Those diagnosed as adults also researched the condition using books and internet, which led to the development of insight and understanding about the impact of ADHD.

Yeah life has been difficult but it's understanding the reason why life has been the way it has.....yeah its knowing what it was helped out a lot you know' Martin 944-945

Knowing about ADHD enabled Martin to reflect on the reason for his past difficulties, which helped him in adjusting to his situation. Kate had been unaware of her ADHD, despite her realisation that some things, such as school work and maintaining employment, were difficult for her.

'I didn't know any different and it wasn't until the last couple of years I've kind of gone ... it's like the penny's dropped and it's kind of like, "Oh my God like the last 30 years"' Kate 540-543

Following Kate's diagnosis, realisation that her difficulties were related to ADHD enabled her to understand past experiences. The fact that she felt the 'penny had dropped' suggests that previous events now made sense in the context of having ADHD.

Taylor (1983) suggests that the process of adjustment involves a search for meaning in which individuals attempt to develop understanding of their life and the impact of events. Participants' beliefs and understanding of themselves and events in their lives seemed to change as a result of their knowledge about ADHD.

Acknowledgement and recognition of a condition enable the individual to begin to reconcile with it. At this stage, a process of cognitive reorganisation and reorientation begins between self and environment. Here, the individual starts to accept a new self-concept as a person with a condition. Values are reappraised and new meanings and goals are sought (Livneh & Antonak, 1997).

2.3.1.4. Loss and mourning of the potential self

Some participants appeared to experience a sense of loss. Loss seemed to be related to a 'potential self' or the person participants may have been

without ADHD. Loss was most obviously associated with a sense of underachievement related to educational goals and also that achievements had involved considerable struggle. Underachievement is likely to have negative consequences. Kate had not achieved the grade she hoped for in her degree, which prevented her from being able to apply for further training.

' I was quite upset and then I got really angry "No I don't want this" then I was angry at the world, angry at all my teachers "why was it not... diagnosed?" And then I got really upset because I was thinking like with Uni..."Oh my God I could have been doing what I really wanted to do". I just think oh back in school I would not have had to do all those resits... not that I would ever want to use it as an excuse but at least then if I knew at that point then that probably could have saved a lot of heartache.' Kate 841-856

Again, Kate experienced a range of emotions as she considered how things may have been different had she known earlier about the ADHD. She expressed anger and a sense of regret that she had not been able to achieve her goal. Hannah had been diagnosed when she was about 10 years old and considered her educational progress to have been delayed because of the ADHD.

' ... because I couldn't concentrate in school then that really impacted on my life because you know if I had been able to concentrate better I

may have got those GCSE's sooner and I might have been where I am a lot sooner.' Hannah 670-673

Despite being high educational achievers, there was a sense of loss and regret regarding the greater difficulty and time commitment experienced by participants to achieve the same level as their peers.

Mourning is a painful process which involves facing up to one's restrictions and acknowledging what the future will entail in respect of managing those restrictions (Altschuler, 1997). Mourning for the loss of a potential self as well as personal and social satisfactions that are or have been denied, is considered to be part of the adjustment process (Wright, 1983).

2.3.1.5. Self growth

The search for positive aspects of difficult experiences is related to personal growth and has been described as 'Benefit Finding' (Tennen & Affleck, 2005). Some participants were aware of positive aspects of ADHD. Kate discussed her ability to process information quickly.

'Yeah that's the good thing about ADHD is that I can just be like whoosh done, really, really quick at things... So there are benefits to it I suppose if you look at it that way' Kate 695-700

Kate attributed her ability to think and respond quickly to having ADHD. Hannah had been researching and discovered information suggesting that

people with ADHD may have 'a tendency to be more creative because they can think of several possibilities at once'.

'maybe my creative writing was a part of my ADHD and without that I would not have my creative writing and I don't think I would be who I am today without that... it was kind of like the silver lining if you like it was kind of making me think perhaps there is a good side to it' Hannah 420-431

Hannah used creative writing as a way of processing events in her life, particularly difficult situations. Recognising that her creativity may be a part of her ADHD enabled Hannah to reconcile it.

Benefit finding is the reappraisal of events, enabling a positive meaning to be found (Sharpe & Curran, 2006). It is considered to be an adaptive strategy and may result in the realisation of personal strengths and positive growth. It has been suggested that realistic, optimistic appraisal is likely to facilitate adjustment by reducing the distress related to a particular situation or condition (Sharpe & Curran, 2006). Participants seemed better able to accept and adjust to ADHD after associating it with positive characteristics. For example, Hannah perceived that her creativity, which had helped her to develop resilience resulted from her ADHD.

2.3.1.6. Integrated self

The ability to integrate ADHD in to the sense of self represents another aspect of the adjustment process. Some participants seemed unable to separate aspects of their personality and identity from the condition itself. In contrast, there was evidence that others experienced a sense of dissonance with regard to their condition. Hannah had integrated ADHD into her sense of self.

'ADHD has always been a part of me and I think I will always see things from the point of view of having my ADHD so I don't know whether... you can say what was ADHD and what was you but I think there is no separation. ADHD is who I am.' Hannah 338-345

Kate who was more recently diagnosed had not yet fully integrated ADHD into her sense of self.

'It's weird because I was kind of getting to the point where I was accepting that I was that type of person that you see in different jobs all the time and at the same time I knew that I wasn't that kind of person so it was kind of frustrating... it didn't match... the two kind of didn't match '
Kate 919-934

Kate reported dissonance between some aspects of her behaviour and her sense of self. This was frustrating for her and she had struggled to integrate her frequent job changes with her self-concept. Diagnosis provided an

explanation and understanding of the difficulties participants had endured, enabling cognitive reframing and reduced dissonance with regard to self-image. For example, Kate was able to reappraise her frequent job changes in the context of ADHD, as opposed to being an aspect of her personality.

It has been suggested that following a diagnosis, the process of adjustment and empowerment of the individual involves the ability to recognise the self as separate from the condition, whilst also integrating the condition as part of the self. When this has been achieved, a new sense of identity is established which enables the individual to live alongside the condition (Aujoulat, Marcolongo, Bonadiman & Deccache, 2008).

2.3.1.7. Denial and distancing

Some participants appeared to demonstrate a denial of or reluctance to identify with ADHD.

' Erm...well...since I was ..probably twenty or twenty one I haven't identified as having ADD anymore' Will 193-194

' I, I sort of wouldn'twouldn't let it be a problem as an adult ' Will 390-391

Will's denial or distancing from ADHD appeared to be related to his perception that as an adult, he was more able to exert control over the condition and, therefore, reduce its impact. Cognitive representations of the

controllability of a condition and self-efficacy regarding the ability to manage that condition are concepts which are likely to enable the individual to minimise impact, whilst also maintaining function and well being in the presence of a long-term condition (Serlachius & Sutton, 2009).

Denial may also be understood as a defence mechanism against the difficult emotions and potential deficits one might experience related to a long-term condition or disability (Livneh & Antonak, 2005). Denial may act as an adaptive strategy to minimise threat and maintain emotional wellbeing. However, if it impacts on the individual's ability to manage their condition, denial becomes maladaptive (Serlachius & Sutton, 2009).

Luke appeared to distance himself from ADHD. He seemed to recognise his difficulties, but was not prepared to attribute them to ADHD.

'... it seems like sort of a cop out to be like....alright it's OK I have a disorder. It's like, no I'm pretty disorganised and like periodically lazy and... really slow at writing and you know, to make it a syndrome is like...sort of to make it out like that it's not OK. I deserve to fail a whole lot of those courses, I didn't do any work.' Luke 1241-1255

Those who had been diagnosed in childhood seemed most likely to distance themselves from ADHD. They also seemed more ambivalent about asking for help to accommodate their difficulties. A number of interpretations may be offered to explain this. Distancing may result from participants' preference

and ability to manage their ADHD independently, or it may be a reluctance to acknowledge the condition due to past experiences of stigma and bullying.

Alternatively, Luke's comment, "it seems like sort of a cop out", suggests that he blames himself rather than ADHD for his difficulties.

Individuals with ADHD may attribute responsibility for their difficulties and underachievement to themselves. This can result in feelings of resentment, bitterness and self-blame which can be interpreted as internalised anger or hostility. Self-blame is likely to impact negatively on the individual's sense of wellbeing and can lead to mental health difficulties (Livneh & Antonak, 1997).

2.3.2. Social appraisal

Negative social appraisal and bullying were experienced by some of the participants and there was a perception that ADHD was misunderstood and the impact of the condition underestimated and trivialised by others.

2.3.2.1. Trivialising ADHD

A general lack of understanding of ADHD and its impact on functioning had the effect of trivialising the condition and resulted in frustration for the participants.

' I do think that there is such a lack of... understanding of ADHD, I mean to many people it's really... a condition that makes a child be hyper and really I don't think may people realise how much it affects someone and how much it has an impact on their life. I mean it's been a huge impact on my life. ' Hannah 459-474

In addition, there was a sense of unfairness that difficulties were attributed to participants' personality or lack of motivation.

'...I do always try... my hardest and then when they say "oh it's you as a person, it's your personality", or "you are lazy", or "you are like you don't really want to do it", or like with time keeping as well they are like "get a watch, get this, get that," it's kind of like I can't really explain it apart from there is just more to it than just like being a bit ditsy or being lazy because I am not when they say I am lazy that is the worst thing they can say and when they say I am not trying.. that's like errrrr' Kate 610-620

Kate's account illustrates her frustration and sense of unfairness at the perceived negative and dismissive appraisal of her difficulties. There is also a sense that she is frustrated with herself as she is unable to communicate the full impact of ADHD to others.

Participants were aware of a lack of understanding regarding ADHD aetiology and impact, and the controversy regarding ADHD as a distinct condition.

The systematic disconfirmation of one's illness perceptions and definitions is referred to as delegitimation (Kleinman, 1992) which was initially discussed in relation to conditions such as chronic pain and Chronic Fatigue Syndrome.

As opposed to "real" physical disease, it is suggested that psychological disorders, where there is absence of an identifiable biological explanation represent "a failure of intentionality and volition and a lapse of rational self-control that must ultimately be recognized to be one's own fault" (Kirmayer, 1988 cited in Ware, 1992). Emotional responses to the perception of being misunderstood, include frustration and sadness and the feeling of being incompetent and inferior (Condon, 2008). The experience of deligitimation has been associated with self-doubt, shame, social isolation and the threat of stigma (Ware, 1992), some of which have been illustrated by these participants.

2.3.2.2. Stigma, labelling and bullying

Several participants had experienced bullying and labelling. Bullying was related to perceived differences in academic, social or behavioural presentation. For example, at school Martin had struggled to keep up in class.

'I used to get bullied a lot because I didn't grasp things quick enough' Martin 89-90

He experienced bullying throughout his education, as did Hannah. She had suffered from low self-esteem in her childhood which had continued to a lesser extent into adulthood. Hannah expressed her frustration at being labelled.

'ADHD is a part of who I am... but I don't want to be labelled as the girl with ADHD... people seem to love to categorise things they love to categorise people, 'you're weird, you're OK, you're normal, you're not' and it seems to me that people aren't happy unless they categorise people because it gives them some kind of security knowing that people can be categories into boxes where as why do I have to be ADHD, why do I have to be weird, why can't I just be Hannah and that be good enough.' Hannah 509-518

People with ADHD are at high risk of stigma, prejudice and discrimination (Mueller, Fuermaier, Koerts, & Tucha, 2012), which arises when an association is made, often mistakenly, with characteristics, attributes and behaviour which are considered unfavourably (Demaio, 2006).

Conditions such as ADHD are likely to attract stigma as they tend to be misunderstood, are high visibility and have symptoms which are perceived as controllable (Goffman, 1963). For example, symptoms may be attributed to laziness, poor discipline and poor-self management. Labels of a mental disorder increase the likelihood that individuals will be set apart from society and consequently stigmatised (Forbes and Schmader, 2010). Martin and Hannahs' accounts illustrate the stigmatisation and negative appraisal associated with ADHD which has been found to affect people across all age ranges (Lebowitz, 2013).

Negative social appraisal can result in negative beliefs about the self and result in the development of maladaptive coping strategies such as avoidance and procrastination. These strategies may further confirm negative self-schema by maintaining and reinforcing maladaptive beliefs (Newark & Stieglitz, 2010).

Social rejection and interpersonal problems are considered to be key factors in the development of conditions such as depression (Joiner & Coyne, 1999), low self-esteem, social anxiety and loneliness (Asher, Rose & Gabriel, 2001). Children are particularly adversely affected by knowledge that they are unpopular with their peers (Friedman et al., 2003). Bullying, as experienced by some participants, has been associated with increased likelihood of mental health issues and has been shown to exacerbate problems associated with existing attentional and social difficulties (Taylor, Saylor, Twyman & Macias, 2010).

2.3.3. Self-regulation

Self-regulation refers to efforts made by a person to alter their own inner states or responses (Vohs & Baumeister, 2004). ADHD impacts on self-control and self-regulatory abilities (Barkley, 1997) and was experienced in a variety of ways by all participants. Participants experienced a variety of self-regulatory difficulties.

2.3.3.1. Attention regulation difficulties

Attention regulation difficulties were reported by all participants across the lifespan. These difficulties had manifested as distractibility - an inability to focus, or conversely, as hyperfocus in which the focus is on one thing to the exclusion of everything else. Will described his experience of both distractibility and hyperfocus.

'I had a terrible time paying attention in class... a teacher would begin to talk about something and erm...my mind would almost immediately wander. Occasionally a teacher would mention something really interesting and that would be all I could think about for the rest of the class.' Will 52-56

Will provides insight into the impact of ADHD in the classroom setting. Importantly, neither distractibility nor hyperfocus enabled him to take in what was being taught. Kate likened her distractibility to multiple TV screens.

'if I am trying to concentrate instead of just looking at the one task like the one TV screen I have like got about 8 going at the one time and then I kind of jump between them and unless I kind of put stuff in place to get rid of the screens so I have just got the one there, then that is when there is like a problem which is most of the time ' Kate 632-640

This analogy suggests that Kate experiences distractions in parallel rather than serially. Her understanding of the problem gives her insight into strategies to improve her concentration.

Links between the expression of ADHD and the underlying biological processes are not yet fully understood. However, it is hypothesised that ADHD is connected to impairments in Executive Functioning related to self-regulation. This prevents the individual from regulating their behaviour in relation to time and future goals (Schmeichel & Baumeister, 2004). Self-regulation theory facilitates an understanding of phenomena such as hyperfocus which is an inability to shift attention, and is in many respects the antithesis of inattention. Executive Function deficits have been identified in both children and adults with ADHD (Nigg, Stavro, Ettenhofer, Hambrick, Miller, & Henderson, 2005) and impacts many areas of functioning, especially the ability to regulate attention and to inhibit inappropriate responses (Barkley, 1997).

2.3.3.2. Executive function difficulties and social orientation

ADHD affects the ability to plan and organise which impacts on the ability to develop and maintain relationships (Barkley, 2002). Participants reported ongoing social difficulties.

'I'm extremely inconsiderate to (my friends) all the time and will go weeks without calling them. Not because I don't want to hang out ... It's the same thing with my family... I don't call home much. It's not that I

don't miss my family or that I don't want to talk to them, but, it never occurs to me....' Luke 822-832

Luke describes his behaviour as inconsiderate. However, his lack of contact with people who are important to him is also reflective of the planning and organisation deficits associated with both ADHD and executive dysfunction. Kate describes her relationship and communication difficulties.

'Relationship-wise... I think I don't really have a social filter ... I am quite blunt, I don't mean to be but if I have like, if I think something in my head I kind of have to say it like there and then ... so I am quite lucky that I still have some friends' Kate 362-369

Her lack of a 'social filter' is illustrative of the response inhibition deficits which are associated with ADHD (Rueda, Posner & Rothbart, 2004), and provides insight into the potential impact of such difficulties on developing and maintaining relationships. Violation of social norms is likely to lead to negative consequences such as social disapproval or exclusion from the group (O'Gorman, Wilson & Miller, 2008). All participants reported experiencing some aspect of relationship difficulties.

Adults with ADHD have been found to show deficits in the ability to recognise the emotions of others and to accurately convey their own emotions (Friedman et al., 2003). In addition, deficits in attending to and processing social feedback may add to their interpersonal difficulties and prevent them

from being able to modify their behaviour and improve social interactions (Paulson, Buermeyer & Nelson-Gray, 2005).

2.3.3.3. Impact on learning

All participants reported self-regulatory deficits which impacted on their ability to function within the learning environment. Kate discussed her difficulties at university.

'...my individual grades in the modules that I really liked, I was getting high firsts in them and the ones that I struggled with I had to re-take and it was so like I don't know how to explain it maybe intermittent maybe like so up and down' Kate 303-307

Participants emphasised that attentional difficulties impacted considerably on their assignment scores, leading to huge variability in grades.

'When it's a programme that I'm actually really interested in.. erm ...I can engage much more... my paramedic training was the best I've ever done in school because I was engaged with the material and for the most part managed to keep my attention level. Nevertheless still very easily distracted.' Will 77-82

Will illustrates the impact of inattention in relation to his vocational training. Despite being extremely interested in the topic, he is aware that he still struggles to maintain attention.

Participants reported an inability to focus on mundane but essential activities such as dealing with paper-work and completing assignments. Difficulties with education and employment were particularly evident in their accounts. Problems manifested as inability to sit and concentrate at school and loss of interest and ability to function effectively in certain work environments. The self-regulation hypothesis would suggest that self-regulatory demands on adults in respect of responsible behaviour, organisation, planning, self-sufficiency and social skills, are likely to intensify the difficulties experienced by people with ADHD (Nigg, et al., 2005).

2.3.4. Coping

Coping has been defined as the cognitive and behavioural efforts of an individual to manage the internal and external demands of a situation which is perceived as taxing or exceeding the resources of the person (Lazarus & Folkman, 1984).

All participants reported having coping strategies for the difficulties of living with ADHD. These could be personal strategies, or support from others. In addition, environmental factors were perceived to impact on coping abilities.

2.3.4.1. Managing strengths and developing resilience

Personal strategies for coping with the symptoms of ADHD varied considerably and tended to involve processes which had developed over time and through necessity. Strategies included exercise to utilise excess

energy and increase focus; limiting time spent on tasks and swapping between tasks to maximise concentration; and removing external distractions such as internet and TV. Some participants relied on the panic of imminent deadlines to motivate themselves to work on assignments, with varying degrees of success. One participant noted that sleep deprivation reduced perfectionistic tendencies which led to procrastination. Hannah attributed her resilience and ability to overcome adversity to her creative writing.

'...it has ... kind of helped shape who I am because without my creative writing I don't think I'd know who I'd be, you know, because it is such a coping strategy for me to do creative writing that I don't know how I would cope if it wasn't for that.' Hannah 925-929

Hannah suggested that her creative writing was instrumental in helping her to develop a positive sense of self. Kate had developed a number of coping strategies to help her manage social situations.

'I need to... just concentrate on biting my tongue or try and hold my thought, think about it and then speak but then that is hard work in itself because I am thinking about that and not the conversation although it might look like I am listening or I might make a little escape like I'll go and make a cup of tea or go and do something or I will pick up something and start reading but again sometimes that looks like I'm not interested which is not the case... then now if people want to speak

to me I kind of like right if you speak to me you do realise... I am probably going to say it how it is' Kate 453-466

Many of Kate's coping strategies, whilst serving to prevent her from committing a 'faux pas', also impacted on her ability to fully participate in the social occasion. For example, her strategy to remove herself from difficult social situations curtailed social interaction and could convey disinterest.

Conversely, Kate's strategy of being open about her difficulties and pre warning people of her tendency to be 'blunt', may help others to develop an understanding and offer the most appropriate opportunity for her to develop and maintain open and honest relationships.

Social situations are likely to pose particular difficulties for people with ADHD. The model of self-regulatory depletion proposes that following an act of self-control, ability to regulate self-control on subsequent unrelated tasks is diminished (Muraven & Baumeister, (2000). It is possible that the high demands of social situations on self-control rapidly deplete the ability of adults with ADHD to self-regulate. Kate's strategy of forewarning companions may help to reduce the effort required in social situations, and therefore, increase the potential to achieve more satisfying social encounters.

Will found that as an adult, his ability to make choices had enabled him to minimise the impact of ADHD on his life and facilitated the development of a more positive self-concept.

'I've come up with coping strategies for what problems I feel I still have, erm.....and made choices which have allowed me to, to live in circumstances which... sort of covered for faults and allowed me to play to strengths ' Will 697-703

Generally, having knowledge and understanding of ADHD had an enabling effect on participants allowing them to develop more adaptive coping strategies including utilisation of positive attributes such as creativity, resilience and determination. The development of adaptive self-management strategies is likely to reduce negative self-appraisal and enable the individual to develop more positive self-beliefs (Newark & Stieglitz, 2010).

Some participants chose activities or occupations that played to the strengths of ADHD, as in Will's case where he worked in a varied and interesting, high pressure environment. A possible explanation for Will's success in such an environment is that noradrenalin, which is derived from dopamine and released as part of the stress response, acts as a natural form of stimulant medication. This activates various parts of the nervous system including the amygdala which is associated with attention (Biederman & Spencer, 1999). Dopamine pathways have been linked to both EF deficits and ADHD (Sonuga-Barke, 2003).

2.3.4.2. Developing new perspectives

Receiving a diagnosis of ADHD enabled participants, family and friends to develop an understanding of difficulties in the context of ADHD, and to

develop supportive strategies. In addition, most participants had accessed some form of professional support, such as psychological counselling, educational support or specialist ADHD psycho-education. The support received had enabled participants to develop new perspectives about themselves, others and their situation. Martin received support through the university.

'It makes things clearer... I might have been thinking about something and like once I've talked it through with her (mentor) she sort of like made me understand it in a different way' Martin 1062-1064

Through his contact with a university mentor, Martin was able to work through academic, personal and relationship issues which enabled him to develop a different perspective. Kate had attended a specialist ADHD clinic.

'It was really helpful like it was so good just to meet everybody else that was a massive thing... because of what people say when they don't understand it does start to make you think, "Oh everyone else is saying it" you then start to believe it ... so that was a massive thing to... Oh my God I am not like a strange person on my own ... Like all these people are strange with me so that was a massive thing...' Kate 648-675

Kate appreciated the opportunity to share and normalise her experience of ADHD. She seemed relieved to meet other people with ADHD. Knowing that she was not the only person affected appeared to reinforce her self-belief

and helped her to cope with the lack of understanding she had experienced previously.

It has been suggested that people facing novel and stressful threats will experience a desire to affiliate with others facing a similar threat (Schachter (1959). Festinger (1954) proposed a 'similarity hypothesis' where he suggested that people prefer to compare themselves with similar others. This enables a more accurate measure of relative standing as compared to people with very different abilities and values.

More recently, Hajek (2007) reported evidence for the efficacy of support given on both an individual and group basis. He suggests that there is an extra dimension to group interventions which adds to the therapeutic effect by enhancing feelings of cohesiveness (sense of belonging and being valued), universality (discovery that problems are not unique), vicarious learning (observing the therapeutic experience of others) and self-understanding (developing insight and understanding of self) (Hajek, 2007). It is possible that group interventions for ADHD may be of particular value in enhancing self-esteem and coping ability.

2.3.4.3. Contextual barriers

Participants' self-perceptions and ADHD-related difficulties appeared to be modified or exacerbated by certain contextual or environmental factors.

After years of difficulty and underachievement at school, Hannah realised that she was capable of achievement and success in her work environment.

'I needed that work to kind of... you know kind of realise and work really did help my confidence a lot because it taught me that I could actually do things and there is things that I am good at and you know I am very good at working with children' Hannah 678-681

This knowledge positively impacted on Hannah's self-confidence and had been a factor in improving her low self-esteem. Luke also experienced difficulties within the learning environment.

' I think in general er,.....there's sort of a particular learning style which is probably the most common successful one, which the educational system is set up for and it would probably be beneficial for, not just me, but people with other... different learning styles and strengths and weaknesses, if at least courses were designed to accommodate people that do things differently.' Luke 969-1010

Luke suggests that the educational system is designed to accommodate the majority. However, he is aware that many people with different abilities would benefit from greater flexibility within the system.

An individual's environmental context may impact on their ability to function. It has been suggested that there is a mismatch between the structure of the environment and the needs of people with ADHD (Gallichan & Curle, 2008). For example, one participant reported considerable difficulty with academic

assessment involving small regular assignments, but performed well in other types of assessment such as examinations.

In society, large systems tend to operate a 'one size fits all' approach where everyone is expected to fit in to the system. The dominant approach to education may operate as a confounding factor where people with ADHD experience more 'disability' as a result of the system (Wang, Badley & Gignac, 2006). Greater flexibility in the way environments are organised may enable individuals with ADHD, and those with other difficulties, to work more effectively within the system and, therefore, function at a more optimum level.

2.4. Clinical implications

A condition such as ADHD where individuals may experience underachievement, criticism and stigma, is likely to lead to negative self-image and self-beliefs. In addition, there is considerable evidence that ADHD is frequently co-morbid with conditions such as anxiety, mood and sleep disorders and substance abuse (Kooij et al., 2012). Due to the pervasive nature of symptoms, clinicians working with adults affected by ADHD will need to take a broad perspective to intervention (Nadeau, 1995). A number of clinically relevant interventions may be beneficial In order to enhance the adjustment process and minimise the negative impact of ADHD and its associated conditions.

Kate expressed some regret that she had not known about her ADHD earlier and had, therefore, been unable to access support. Early diagnosis would facilitate access to appropriate support for difficulties encountered in areas such as education, employment and relationships.

Development of psycho-educational and therapeutic interventions is required to reduce the likelihood that individuals will underachieve and internalise negative attributions which can lead to the development of mental health difficulties.

Interventions should be aimed at enhancing understanding of the underlying neurological processes that are likely to contribute to ADHD symptoms and developing ability to cope with the emotional, cognitive and behavioural difficulties associated with self-regulation deficits (Kooij, et al., 2010). This could be achieved through psycho-educational interventions delivered on an individual or group basis and containing elements such as problem-solving, time-management and organisational skills and developing strategies to enhance attention and memory, reduce distractions and modify the social and physical environment (Nadeau, 1995).

The findings of this study suggest that people with ADHD experience a number of identity transitions during the adjustment process. It is likely that psychological support would be beneficial during this time.

Participants reported that others lacked understanding of ADHD, which led to trivialisation and stigmatisation in relation to the condition. Systemic interventions may help to validate the symptoms of ADHD and enhance understanding and support in family and wider contexts. This may help to reduce stigma. Awareness and understanding of ADHD might be improved through education and training initiatives, for example in schools, colleges, universities and work places. In addition, development of more flexible systems within education and work environments would accommodate differing abilities and needs and reduce the disabling impact of ADHD.

Currently, not all areas of the country offer services to adults with ADHD. This may lead to difficulty obtaining a diagnosis and accessing treatment, including medication and therapeutic services. With increasing awareness of ADHD as an adult condition, services need to develop strategies to address any shortfall.

2.5. Limitations of the study

The aim of this study was to develop an understanding of adults' experiences of ADHD. Therefore, the qualitative methods and small sample size reflect this purpose and do not lend themselves to generalisation to the wider population. In addition, these participants had either completed, or were in the process of completing degree level education. Their experiences may not be typical of other adults with ADHD and may vary from those with different educational backgrounds. As participants were recruited from non-clinical

routes, results may not be representative of the experiences of adults currently accessing mental health services.

Through an in-depth exploration of the experiences of adults with ADHD, this study has advanced current understanding of what it is like to live with the condition. Information has been gained on the role of ADHD in relation to the individual's self-concept, the impact of self-regulation difficulties on daily life, and a range of coping strategies utilised by participants. Participants' perceptions of the way that ADHD is appraised by others has also been discussed.

2.6. Future research

Exploration of the experiences of more diverse populations of adults with ADHD would further expand the knowledge base. This may include people at different stages of their lives such as parents with younger or older children, older adults and people from clinical populations. In addition, it would be interesting to compare the experiences and coping styles of people with different educational abilities as this information could inform development of future services.

Further research regarding the connection between the adjustment process in adult ADHD and the impact on identity may also be indicated. This could provide important information to clinical psychologists for the development of interventions.

Further research into the impact of social comparison, social appraisal and delegitimation of ADHD particularly related to the controversy surrounding the condition may provide interesting and thoughtful insight into the development of co-morbid mental health conditions associated with ADHD.

2.7. Conclusion

In conclusion, this research has explored the experiences of five adults living with ADHD and has considered methods of coping and support needs.

ADHD had a negative impact on various aspects of adults' lives including education, work and relationships. This appeared to result from the self-regulation deficits in relation to attention and impulsivity that are observed in ADHD. Adjustment to ADHD was integrally related to self-identity which transitioned over time. Positive aspects of the condition were also identified.

In relation to support, participants utilised psycho-social strategies rather than medication to cope with their condition. Strategies included gaining knowledge and understanding of ADHD, developing psychological, social and behavioural strategies, developing supportive networks and, where possible, making environmental adjustments to enhance strengths and diminish weaknesses. This study reflects previous findings describing the emotional impact of difficulties in early life and following diagnosis and supports the premise that participants experience a process of adjustment to living with ADHD (Young, et al., 2008).

This research has added to current knowledge by exploring the experience of ADHD from the perspective of adults with the condition. It has highlighted

the challenges they face as a result of the condition itself and the impact of the wider context in which they function. An understanding of the impact of the condition and the support needs of the individuals affected has also been gained.

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Chapter 3: Reflective paper

A Reflexive Analysis and Commentary of the Research Process.

A note about reflexivity

Reflexivity is becoming an essential part of the evaluation of quality in qualitative research (Crowley, 2010). Yardley (2000) suggests that quality may be achieved through a number of principles. Firstly, research should have sensitivity to context. As a trainee clinical psychologist I am concerned with the development of knowledge and understanding to inform clinical practice and alleviate distress and this has informed all aspects of the research. Secondly, commitment and rigour are required to enable systematic analysis and ensure that interpretation develops from idiographic engagement with the data. Third, transparency of process and a critically coherent account of the research are necessary and finally, the narrative account should offer important and useful information about the phenomenon of interest (Smith, Flowers & Larkin, 2009).

3.1. Introduction

Attention Deficit Hyperactivity Disorder (ADHD) is characterised by the behavioural symptoms of inattentiveness, hyperactivity and impulsiveness (Barkley, Murphy and Fischer, 2008). Originally thought to be a condition of childhood, there has been increasing recognition that ADHD continues into adulthood for a substantial proportion of those affected (e.g. Weiss & Murray, 2003). Despite considerable research, the aetiology of this disorder remains uncertain. One of the main theoretical explanations of ADHD is related to deficits in Executive Functioning (EF). This relationship was reviewed and ADHD in adults was found to be linked to deficits in EF, particularly in the domains of response inhibition, set-shifting and working memory (see Chapter 1).

A qualitative study using Interpretative Phenomenological Analysis (IPA) was undertaken to explore the experience of ADHD in adults. Four main themes emerged from the data: 'Process of adjustment to ADHD', 'Social Appraisal', 'Self-Regulation' and 'Coping' (see Chapter 2).

The current Chapter offers a reflexive analysis of personal learning in the context of the roles and processes involved in conducting this research, and is, therefore, written in the first person (Moon, 2004, pp. 89). A commentary reflecting on the research experience follows.

3.2. Reflexive Analysis

3.2.1. Position of researcher

My interest in adult ADHD developed whilst working with a client who had the condition. His problems were complex and impacted considerably on his life.

I researched the condition to develop my understanding of his difficulties and to inform the intervention. Through the research, I became aware of the hypothesised connection between ADHD and Executive Function (EF).

As an undergraduate, I had developed an interest in EF. I was working in a service for people with acquired brain injury at the time, which enabled me to observe some of the difficulties experienced by people with frontal lobe damage and deficits in EF. The connection between ADHD and the EF hypothesis compounded my interest in both concepts and the research thesis presented an ideal opportunity to consider these areas in more depth.

ADHD elicits considerable debate and controversy. The controversy relates to issues around the diagnostic validity, presentation, aetiology and treatment of the condition (Zwi & York, 2004). The controversy casts doubt on the validity of ADHD as a distinct condition (Southall, 2007, Baldwin & Cooper, 2000), an issue which is mirrored in other mental health conditions, such as schizophrenia, where definitive causal explanations are not available and which also attracts much debate (Boyle, 2002). The increasing use of stimulant medication such as methylphenidate and amphetamine as a treatment for both adults and children with ADHD is also contentious.

These issues have been the subject of much personal reflection. It is my belief that medication which is unnecessary, unbeneficial, or harmful should never be given to children or adults. With regard to the concept of ADHD, I feel that there is insufficient evidence at present to enable a thorough understanding of the condition or treatment. However, I feel that acknowledgement of the distress experienced by individuals with ADHD is paramount, as is access to appropriate and effective treatment and support.

My rationale for researching adult ADHD has been to develop a greater understanding of the condition with the ultimate aim of informing psychological intervention. Consideration has been given to the controversy related to ADHD in Chapter 1, but this has not been the prime motivation for the research. This may be considered a criticism or limitation of the research.

3.2.2. Epistemological position

The decision to use Interpretative Phenomenological Analysis (IPA) reflects my epistemological position and offers an appropriate methodology for the study of individuals' experiences of a particular phenomenon (Smith & Osborn, 2003). Other methods were considered and felt to be less appropriate (see Chapter 2 for discussion). IPA may be positioned between critical realism and social constructivism. The critical realist approach suggests that 'truth is out there', but is modified by the interpretations and biases of the researcher. The social constructivist approach suggests that 'truth' is unique to the individual and is constructed through their interaction with the world (Dempster, 2011). IPA aligns with these two approaches

through consideration of the double hermeneutic which refers to the researcher's interpretation of the participant's interpretation of their experience (Smith & Osborn, 2003).

3.2.3. Ethical issues

A number of ethical issues were raised during this research process. I have been aware of conflict between my role as practitioner and my role as scientist, particularly during interviews with participants where the situation was reminiscent of the therapeutic relationship. At times, my responses and questions may have related more to the clinical rather than the research perspective. My awareness of this enabled me to observe the boundaries of the researcher and not be led by my role as a clinician.

It was evident during the interviews that participants may have been at different stages of adjustment to their ADHD. I addressed this issue by ensuring that participants had the opportunity to debrief afterwards. This enabled them to discuss any concerns and a number of them reflected that they had found the research beneficial and that talking about the ADHD had helped them to think differently about their condition. It was reassuring to feel that participants had found the research a worthwhile experience.

The controversy of ADHD as a diagnosis presented an ethical dilemma to my position as researcher. I felt that in committing to the research, there was an implicit assumption of my acceptance of ADHD as a distinct condition. To contest the condition would feel disloyal and that I had misled my participants

regarding the purpose of the research. Throughout this process, knowledge of the difficulties faced by people with ADHD has been the motivating factor and has ensured that my primary aim in conducting this research has been to raise awareness and understanding of the condition in order to inform future intervention and service provision. This position is likely to have impacted on all aspects of the research.

3.2.4. Impact on researcher

On reflection the research experience has evoked mixed emotions. Obtaining ethical approval was one of the most stressful aspects of the journey. This was partly due to the fact that I lacked knowledge of the process, but also because I had not been explicit enough regarding some aspects of the application. I have now gained considerable insight into the ethics process and am aware of the need to be clear and explicit in my writing. This has important implications for my professional practice and I am working to be more mindful of this.

Recruiting participants was more difficult than I had anticipated and I needed to be creative and flexible in my approach. Discussions with my supervisor were also helpful in generating ideas. My success in accessing sufficient participants has reinforced the need for determination in any worthwhile endeavour and I have developed additional problem-solving abilities that will be valuable in future practice.

Meeting participants and conducting interviews has been extremely interesting and rewarding and I feel privileged to have been entrusted with their stories. I am mindful of the responsibility I have as a researcher to offer a sensitive, coherent and representative account of participants' experiences.

I am aware that I have perfectionistic tendencies, which in many respects can be a strength. However, this resulted in a degree of procrastination which impacted on progress. In order to manage this tendency, I have utilised a number of strategies including the use of supervision and a reflective diary, setting myself small specific targets and developing motivation and momentum by reminding myself of the end goal.

In conclusion, in addition to the knowledge and expertise I have gained in respect of ADHD, EF and the research process, I have gained insight into a number of personal strengths and weakness which I feel will enable me to become a more effective practitioner and researcher in the future.

3.3. Reflective Commentary

Despite a considerable body of ADHD literature, there remains much uncertainty about the condition. The condition is complex, with many hypotheses about the aetiology. Discussions reflect the nature/nurture debate and consider causal factors ranging from genetic disorders to parenting style.

3.3.1 Literature review

Initially, curiosity regarding the aetiology of ADHD and interest in Executive Functioning (EF) led to a focus on the connection between deficits in EF and adult ADHD. Reviews on this topic had already been conducted in 2005 (Boonstra, Oosterlaan, Sergeant, and Buitelaar, 2005; Willcutt, Doyle, Nigg, Faraone, and Pennington, 2005). This review would bring the knowledge around ADHD and EF up to date.

The aim of the review was to develop a practical understanding of ADHD, partly to inform the literature and partly to inform personal practice as a clinical psychologist. Research focused on studies reporting neuropsychological assessment of EF. Research using neuroimaging techniques was excluded with the rationale that these techniques are extremely specialised and unlikely to be readily accessible in clinical practice. However, the neuroimaging literature is at the forefront of research and may have offered more insight into the underlying processes and role of EF in ADHD. Studies focusing on medication were felt to be less intrinsic to the role of the psychologist and were also excluded. These exclusions restricted the number of articles to nine which focused the review and enabled a more in depth critique in the limited time available. However, the broad range of EF measures considered in the studies resulted in some limitations to the extent that data could be synthesised.

A critical review of the literature enabled a more thorough understanding of ADHD in relation to neuropsychological theory. It has given me greater

awareness of the strengths and limitations of neuropsychological testing in general and in relation to assessment of EF in particular. This will be of considerable value in future practice.

3.3.2 Research process

After reviewing EF and adult ADHD from a neuropsychological perspective, I felt it appropriate to relate these more abstract concepts to the lived experience of being an adult with ADHD. My aim in developing knowledge and understanding of psychological conditions and concepts is to inform clinical practice. Also, National Institute for Health and Clinical Excellence Guidance (NICE; 2008) recommends that when developing services for adults with ADHD, service users should be involved in determining what is needed. This ensures a greater understanding of the specific needs of the client and enables services to be tailored to them.

A broad research question and brief interview guide, consisting of prompts informed by previous literature (see Appendix V) were developed. These were designed to limit the degree of researcher influence as I already had knowledge and preconceptions of ADHD. After contacting several support groups for adult ADHD and receiving no response, recruitment was planned via a post graduate email forum, university support services and the NHS. Support groups would also be approached again. Ethical approval was sought through the NHS route, which took some time but was eventually successful (see Appendix VIII). Ultimately, no participants were recruited through the NHS. However, I feel that increased confidence and knowledge

were gained from this experience which will enable me to conduct research in my future practice.

Recruitment resulted in five interviews. The original aim was for six. Having fewer participants enables a more in depth analysis and is unlikely to be detrimental in IPA where the aim is not to generalise (Reid, Flowers & Larkin, 2005). Analysis took the form of an iterative process which involves moving back and forth between the analysis and the original transcripts (Smith & Osborn, 2003). Development of the themes and write up of the narrative account involved several cycles of drafting, re-drafting and revisiting the original transcripts. The aim was to capture the essence of the accounts, and at the same time, to ensure that the research questions had been answered. The quality of the analysis was monitored through supervision and the use of a reflective diary (Ortlipp, 2008). This study represents my own interpretation of the participants' experiences and may differ from interpretations made by others.

Four themes were developed: 'Process of adjustment to ADHD', 'Social Appraisal', 'Self-Regulation' and 'Coping'. Participants with ADHD experienced an adjustment process which impacted on their sense of self. Difficulties related to education, work and relationships and negative appraisal by others were also experienced and participants discussed a number of coping strategies.

3.4. Conclusion

This research has contributed to the existing literature in a number of ways. Firstly, the literature review suggests that deficits in specific areas of EF are apparent in some, but not all adults with ADHD. This may be due in part, to the finding that traditional neuropsychological measures of EF do not always reveal deficits that appear obvious from the history and observation of the client. Some measures with more ecological relevance are now being utilised. However, further research and development in this area is needed. The relationship between ADHD and EF is likely to be complex involving multiple factors. This may account for discrepancies in the findings.

The research explored the experience of ADHD in the daily lives of participants. The condition impacted in different contexts and on participants' self-perception and the way they were appraised by others. Finally, participants reported their coping strategies.

It is hoped that this research will provide a basis from which to explore other aspects of ADHD in adults. For example, more in depth research into the coping strategies of adults with ADHD would be beneficial as it would help to inform the development of future interventions and services. It may also be possible to consider developing support and interventions for children and adolescents based on the coping strategies that have been developed by adults with ADHD.

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Appendices I-IX

Appendix I – DSM-IV and DSM-V Criteria

DSM - IV CRITERIA FOR ATTENTION DEFICIT HYPERACTIVITY DISORDER

The DSM-IV (Diagnostic and Statistical Manual of Mental Disorders, fourth edition) contains the Diagnostic Criteria for the most common mental disorders including: description, diagnosis, treatment, and research findings. Below is the Diagnostic Criteria for diagnosing Attention Deficit (Hyperactivity) Disorder:

A. Either (1) or (2)

1) Six or more of the following symptoms of **inattention** have persisted for at least six months to a degree that is maladaptive and inconsistent with the developmental level:

Inattention

1. often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities
2. often has difficulty sustaining attention in tasks or play activities
3. often does not seem to listen when spoken to directly
4. often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behaviour or failure of comprehension)
5. often has difficulty organizing tasks and activities
6. often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework)
7. often loses things necessary for tasks or activities at school or at home (e.g. toys, pencils, books, assignments)
8. is often easily distracted by extraneous stimuli
9. is often forgetful in daily activities

2) Six or more of the following symptoms of **hyperactivity-impulsivity** have persisted for at least 6 months to a degree :

Hyperactivity

1. often fidgets with hands or feet or squirms in seat
2. often leaves seat in classroom or in other situations in which remaining seated is expected
3. often runs about or climbs excessively in situations in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings of restlessness)
4. often has difficulty playing or engaging in leisure activities quietly
5. often talks excessively

6. is often 'on the go' or often acts as if 'driven by a motor'

Impulsivity

7. often has difficulty awaiting turn in games or group situations
8. often blurts out answers to questions before they have been completed
9. often interrupts or intrudes on others, e.g. butts into other children's games

B. Some hyperactivity - impulsive or inattentive symptoms that cause impairment were present before the age of 7 years.

C. Some impairment from the symptoms is present in more than two or more settings (e.g. at school or work or at home).

D. There must be clear evidence of clinically significant impairment in social, academic, or occupational functioning.

E. The symptoms do not occur exclusively during the course of a Pervasive Developmental Disorder, Schizophrenia, or other Psychotic Disorder, and are not better accounted for by another mental disorder (e.g. Mood Disorder, Anxiety Disorder, Dissociative Disorder, or a Personality Disorder).

Based on these criteria, three types of ADHD are identified:

1. ADHD, Combined Type: if both criteria 1A and 1B are met for the past 6 months
2. ADHD, Predominantly Inattentive Type: if criterion 1A is met but criterion 1B is not met for the past six months
3. ADHD, Predominantly Hyperactive-Impulsive Type: if Criterion 1B is met but Criterion 1A is not met for the past six months.

The above information has been taken from the American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision. Washington, DC, American Psychiatric Association, 2000.

DSM - V CRITERIA FOR ATTENTION DEFICIT HYPERACTIVITY DISORDER

- A. A persistent pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development, as characterized by (1) and/or (2):
1. Inattention: Six (or more) of the following symptoms have persisted for at least 6 months to a degree that is inconsistent with developmental level and that negatively impacts directly on social and academic/occupational activities: Note: The symptoms are not solely a manifestation of oppositional behavior, defiance, hostility, or failure to understand tasks or instructions. For older adolescents and adults (age 17 and older), at least five symptoms are required.
 - a. Often fails to give close attention to details or makes careless mistakes in schoolwork, at work, or during other activities (e.g., overlooks or misses details, work is inaccurate).
 - b. Often has difficulty sustaining attention in tasks or play activities (e.g., has difficulty remaining focused during lectures, conversations, or lengthy reading).
 - c. Often does not seem to listen when spoken to directly (e.g., mind seems elsewhere, even in the absence of any obvious distraction).
 - d. Often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (e.g., starts tasks but quickly loses focus and is easily sidetracked).
 - e. Often has difficulty organizing tasks and activities (e.g., difficulty managing sequential tasks; difficulty keeping materials and belongings in order; messy, disorganized work; has poor time management; fails to meet deadlines).
 - f. Often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (e.g., schoolwork or homework; for older adolescents and adults, preparing reports, completing forms, reviewing lengthy papers).
 - g. Often loses things necessary for tasks or activities (e.g., school materials, pencils, books, tools, wallets, keys, paperwork, eyeglasses, mobile telephones).
 - h. Is often easily distracted by extraneous stimuli (for older adolescents and adults, may include unrelated thoughts).
 - i. Is often forgetful in daily activities (e.g., doing chores, running errands; for older adolescents and adults, returning calls, paying bills, keeping appointments).
 2. Hyperactivity and impulsivity: Six (or more) of the following symptoms have persisted for at least 6 months to a degree that is inconsistent with developmental level and that negatively impacts directly on social and academic/occupational activities: Note: The symptoms are not solely a manifestation of oppositional behavior, defiance, hostility, or a failure to understand tasks or instructions. For older adolescents and adults (age 17 and older), at least five symptoms are required.
 - a. Often fidgets with or taps hands or feet or squirms in seat.
 - b. Often leaves seat in situations when remaining seated is expected (e.g., leaves his or her place in the classroom, in the office or other workplace, or in other situations that require remaining in place).
 - c. Often runs about or climbs in situations where it is inappropriate. (Note: In adolescents or adults, may be limited to feeling restless.)
 - d. Often unable to play or engage in leisure activities quietly.

e. Is often “on the go,” acting as if “driven by a motor” (e.g., is unable to be or uncomfortable being still for extended time, as in restaurants, meetings; may be experienced by others as being restless or difficult to keep up with).

f. Often talks excessively.

g. Often blurts out an answer before a question has been completed (e.g., completes people’s sentences; cannot wait for turn in conversation).

h. Often has difficulty waiting his or her turn (e.g., while waiting in line).

i. Often interrupts or intrudes on others (e.g., butts into conversations, games, or activities; may start using other people’s things without asking or receiving permission; for adolescents and adults, may intrude into or take over what others are doing).

B. Several inattentive or hyperactive-impulsive symptoms were present prior to age 12 years.

C. Several inattentive or hyperactive-impulsive symptoms are present in two or more settings (e.g., at home, school, or work; with friends or relatives; in other activities).

D. There is clear evidence that the symptoms interfere with, or reduce the quality of, social, academic, or occupational functioning.

E. The symptoms do not occur exclusively during the course of schizophrenia or another psychotic disorder and are not better explained by another mental disorder (e.g., mood disorder, anxiety disorder, dissociative disorder, personality disorder, substance intoxication or withdrawal).

Specify whether:

314.01 (F90.2) Combined presentation: If both Criterion A1 (inattention) and Criterion A2 (hyperactivity-impulsivity) are met for the past 6 months.

314.00 (F90.0) Predominantly inattentive presentation: If Criterion A1 (inattention) is met but Criterion A2 (hyperactivity-impulsivity) is not met for the past 6 months.

314.01 (F90.1) Predominantly hyperactive/impulsive presentation: If Criterion A2 (hyperactivity-impulsivity) is met and Criterion A1 (inattention) is not met for the past 6 months.

Specify if:

in partial remission: When full criteria were previously met, fewer than the full criteria have been met for the past 6 months, and the symptoms still result in impairment in social, academic, or occupational functioning.

Specify current severity:

Mild: Few, if any, symptoms in excess of those required to make the diagnosis are present, and symptoms result in no more than minor impairments in social or occupational functioning.

Moderate: Symptoms or functional impairment between “mild” and “severe” are present.

Severe: Many symptoms in excess of those required to make the diagnosis, or several symptoms that are particularly severe, are present, or the symptoms result in marked impairment in social or occupational functioning.

Diagnostic Features The essential feature of attention-deficit/hyperactivity disorder (ADHD) is a persistent pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development. Inattention manifests behaviorally in ADHD as wandering off task, lacking persistence, having difficulty sustaining focus,

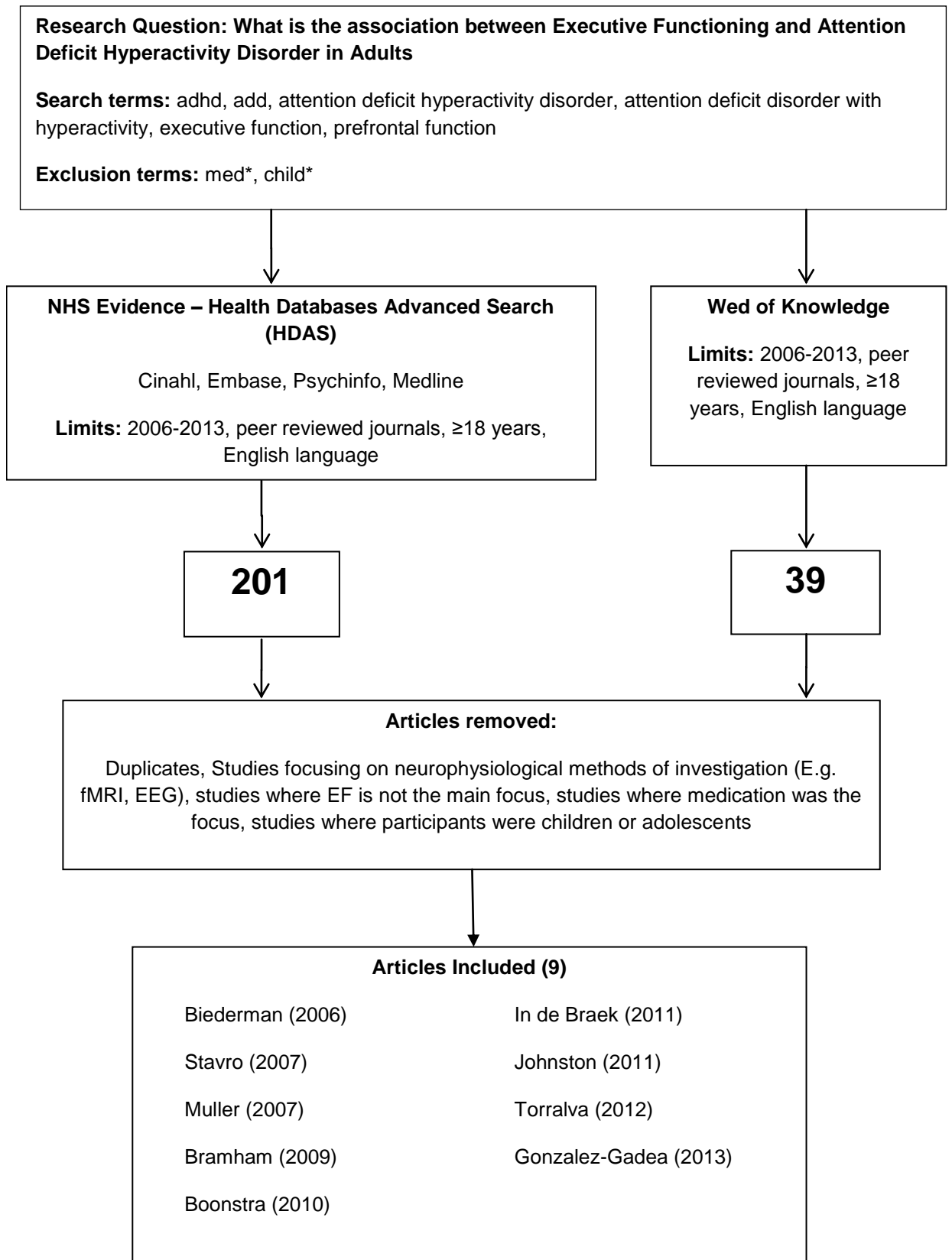
and being disorganized and is not due to defiance or lack of comprehension. Hyperactivity refers to excessive motor activity (such as a child running about) when it is not appropriate, or excessive fidgeting, tapping, or talkativeness. In adults, hyperactivity may manifest as extreme restlessness or wearing others out with their activity. Impulsivity refers to hasty actions that occur in the moment without forethought and that have high potential for harm to the individual (e.g., darting into the street without looking). Impulsivity may reflect a desire for immediate rewards or an inability to delay gratification. Impulsive behaviors may manifest as social intrusiveness (e.g., interrupting others excessively) and/or as making important decisions without consideration of long-term consequences (e.g., taking a job without adequate information). ADHD begins in childhood. The requirement that several symptoms be present before age 12 years conveys the importance of a substantial clinical presentation during childhood. At the same time, an earlier age at onset is not specified because of difficulties in establishing precise childhood onset retrospectively. Adult recall of childhood symptoms tends to be unreliable, and it is beneficial to obtain ancillary information. Manifestations of the disorder must be present in more than one setting (e.g., home and school, work). Confirmation of substantial symptoms across settings typically cannot be done accurately without consulting informants who have seen the individual in those settings. Typically, symptoms vary depending on context within a given setting. Signs of the disorder may be minimal or absent when the individual is receiving frequent rewards for appropriate behavior, is under close supervision, is in a novel setting, is engaged in especially interesting activities, has consistent external stimulation (e.g., via electronic screens), or is interacting in one-on-one situations (e.g., the clinician's office).

Associated Features Supporting Diagnosis Mild delays in language, motor, or social development are not specific to ADHD but often co-occur. Associated features may include low frustration tolerance, irritability, or mood lability. Even in the absence of a specific learning disorder, academic or work performance is often impaired. Inattentive behavior is associated with various underlying cognitive processes, and individuals with ADHD may exhibit cognitive problems on tests of attention, executive function, or memory, although these tests are not sufficiently sensitive or specific to serve as diagnostic indices. By early adulthood, ADHD is associated with an increased risk of suicide attempt, primarily when comorbid with mood, conduct, or substance use disorders. No biological marker is diagnostic for ADHD. As a group, compared with peers, children with ADHD display increased slow wave electroencephalograms, reduced total brain volume on magnetic resonance imaging, and possibly a delay in posterior to anterior cortical maturation, but these findings are not diagnostic. In the uncommon cases where there is a known genetic cause (e.g., Fragile X syndrome, 22q11 deletion syndrome), the ADHD presentation should still be diagnosed.

The above information has been taken from the American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition. Washington, DC, American Psychiatric Publishing, 2013.

Appendix II: Flow Chart showing search strategy

Search strategy



Appendix III – Tables

Table 1.1. Summary of Studies

Table 1.2. Measures of EF

Table 1.3. Summary of Diagnostic Assessment

Table 2.2. Table of Super & Sub Ordinate Themes

Table 1.1. Summary of Studies

Author/date & location	Participants	Aim of study/paper	EF Measures	Main findings/conclusions	Strengths & limitations
Biederman (2006) USA	ADHD – 147 ADHD & EF – 66 NC – 122 NC & EF – 23	To evaluate the impact of deficits in EF on the functional outcomes of adults with and without ADHD	SCWT, WCST, ROCFT, Estimated freedom from distractibility	Psychometrically defined deficits of EF may help identify a subgroup of adults with ADHD at high risk for occupational and academic underachievement	Thorough diagnostic procedures to ensure ADHD and non-ADHD are defined. EF deficits defined & rationale given. Study has limited power but analysis not given.
Muller (2007) Germany	ADHD – 30 NC - 27	To assess cognitive Performance, including EF, in a sample of psychopharmacologically treated adult patients with ADHD.	SCWT, TOL, COWAT, TMT, Sensomotor function (Neurobat),	Adults with ADHD show indicators of lowered cognitive performance under medication. These are related more to memory and attention under high mental load than to response inhibition or simple attention or motor performance. Lower performance in adults with ADHD as compared to controls was observed in verbal and visual memory, speed of visuo-motor search, set-shifting and divided attention. Inhibition and simple response speed were less affected.	No significant difference in age, gender, years in education, handedness, and IQ between ADHD & control. Does not mention informant completion of rating scales. Reports effect sizes.
Stavro (2007) USA	ADHD – 71 NC - 32	To evaluate how EF and adaptive functioning related to ADHD symptom dimensions	TMT, SCWT, WCST, LST, TOL	The findings suggest that inattentive-disorganised symptoms may be the primary contributor to key aspects of poorer adaptive function and may be the behavioural path through which EF deficits lead to adaptive impairment in adults with ADHD.	Large sample size, thorough diagnostic procedure, discusses potential confounds.

Bramham (2009) UK	ADHD – 53 ASD – 45 NC - 31	To determine whether the same EF deficits exist in adults with ADHD and ASD as do in children and to determine whether ADHD and ASD can be distinguished on the basis of their EF profiles.	VFT, BADS – zoo map and key search	The findings showed that it is possible to differentiate between adult ADHD and ASD using measures of EF. Also, the pattern of EF deficits is consistent from childhood to adulthood.	No significant differences in age or gender between cases and controls. ADHD & ASD groups broadly similar in non-EF domains of cognitive functioning except picture completion. Insufficient numbers to stratify the sample into ASD & ADHD subtypes. A major limitation of this study is that the extent of comorbidity was not assessed in the two clinical groups, i.e. ADHD symptoms in the ASD group and ASD symptoms in the ADHD group; nor were measures of either condition administered to the control group
Boonstra (2010) Netherlands	ADHD – 49 NC - 49	To determine whether adults with ADHD show deficits with inhibition; to determine whether difficulties with inhibition are linked to other EF deficits; to determine whether EF deficits remain a critical part of ADHD when IQ and non-EF performance has been controlled for.	Fluency – verbal - COWAT and nonverbal - RFFT, TOL, SCWT, CT, CPT, WCST, PP, WM – verbal – digit span & spatial – SOPT, CDT,	Large differences were found between adults with ADHD and NCs on the EF of inhibition even when controlled for IQ and non-EF demands. Differences in set-shifting, fluency, working memory & planning did not withstand controlling for IQ & non-EF. Adult ADHD may mainly be about inhibition deficits.	Efforts made to match controls on several variables. Comprehensive diagnostic criteria for ADHD and NC. Careful selection of measures of EF
In de Braek (2011) Netherlands	ADHD – 30 NC - 42	To determine whether EF inhibition measures would discriminate adult ADHD from clinical controls; to determine whether specific EF complaints are more prevalent in an	SCWT, VLT	ADHD group reports more EF difficulties than non-ADHD group. No differences between groups with regard to attention & hyperactivity difficulties. The self-monitoring function of verbal learning is impaired in adult ADHD	Relatively small n (30 ADHD & 42 non-ADHD), all taken from a clinical sample. Not sure whether there was sufficient difference between controls and cases on ADHD symptoms

		adult ADHD sample that a non-ADHD sample; to determine whether equal prevalence of comorbidity exists between clinical ADHD and non-ADHD groups.			
Johnston (2011) UK	ADHD = 24 ASD – 24 NC - 14	To determine whether there is a difference in response inhibition between adults with ADHD and adults with ASD.	SCWT, HSCT, MFFT	Adults with ADHD show deficits in response inhibition where adults with ASD do not. Adults with ADHD perform quicker but less accurately on SCWT and MFFT than the ASD group. Adults with ADHD were impaired on SCWT compared to normal controls	Relatively small sample size. Thorough diagnostic process for clinical groups, but less so for control group. Limited EF measures as only considering one aspect of EF. Control group did not complete the Barkley Childhood Scale
Torralva (2012) Argentina	ADHD – 117 NC - 21	To examine the performance of adults with and without ADHD on standard neuropsychological tests of EF and on an ecological, highly demanding EF task	WCST, TMT, Digits backward, Letters & numbers, Phonological fluency	EF deficits may be detected in adults with ADHD on more ecological and highly demanding tasks even though they may perform within the normal range on standard neuropsychological tests of EF.	It was not clear whether controls had been tested for ADHD. There were only 21 in the control group. The groups did not match on educational level.
Gonzalez-Gadea (2013) Argentina	ADHD – 22 ASD – 23 NC - 21	To explore the inter-individual variability in EF and social cognition in adults with ADHD & AS. To compare differential characteristics and commonalities in the cognitive profiles of EF and social cognition between ADHD, AS & normal controls.	WCST, TMT, Digits backward, Letters & numbers, Hotel Task (multitasking)	Adults with ADHD demonstrated an EF deficit in WM. No deficits in performance were observed in adults with ADHD & AS on the Hotel Task. Heterogeneity in EF appears to be a common feature of ADHD & AS.	Small n in all groups – lack of statistical power. Half ADHD group were on medication

Table 1. Description of Studies. Measures of Executive Function include: SWCT - Stroop Colour-Word Test, WCST - Wisconsin Card Sorting Test, ROCFT – Ray-Osterrieth Complex Figure Task, LST - Logan Stop Task, TOL – Tower of London, VFT – Verbal Fluency Test, TMT – Trail Making Test, BADS - Behavioural Assessment of Dysexecutive Syndrome, WM - working memory, HSCT - Hayling Sentence Completion Test, COWAT - Controlled Oral Word Association Test, RFFT - Ruff Figural Fluency Test, CPT - Continuous Performance Test, CDT - Circle Drawing Task, SOPT - Self-Ordered Pointing Test, FPT - Five Point Test – Unique Design

Table 1.2. Measures of EF

Executive Function	Measures
Set-shifting	Wisconsin Card Sorting Test (WCST), Trail Making Test (TMT), Change Task, Five Point Test (5PT)
Planning, goal setting, problem solving	Behavioural Assessment of Dysexecutive Syndrome (BADS), Tower of London (TOL), Self-Ordered Pointing Test (SOPT)
Working memory	Digit span backwards, Trail Making Test (TMT)
Response inhibition/ Interference control/ Monitoring	Stroop Colour-Word Test (SCWT), Stop-signal reaction time (SSRT), Hayling Sentence Completion Test (HSCT), Trail Making Test (TMT), Continuous Performance Test (CPT), Circle Drawing Task (CDT) MFFT, Ruff Figural Fluency Test (RFFT), Self-Ordered Pointing Test (SOPT)
Verbal fluency	Verbal Fluency Test (VFT), Controlled Oral Word Association Test (COWAT)

Table 1.2. Overview of measures used for the assessment of specific domains of Executive Function

Table 1.3. Summary of Diagnostic Assessment & Matching Factors/Potential Confounds

Study	Diagnostic Procedure	Interviewer	Inclusion/Exclusion	Matching factors/potential confounds considered
Biederman (2006)	<ol style="list-style-type: none"> 1. Referral to ADHD clinic or response to advertisement 2. Telephone questionnaire 3. SCID for ADHD, affective disorders, schizophrenia & educational history 4. Full scale IQ estimated from WAIS III block design & vocabulary 5. Academic achievement rated by WRAT-III <p>ADHD required positive diagnosis at all 3 stages. Control required negative ADHD diagnosis at all 3 stages</p>	Psychology graduates trained to high levels of interrater reliability for the assessment of psychiatric diagnosis. Kappa coefficient of agreement computed following ratings by psychiatrists and clinical psychologists listening to recording of interviews made by assessment staff	Participants were excluded if they had major sensorimotor handicaps (e.g., deafness, blindness), psychosis, autism, inadequate command of the English language, FSIQ < 80. No ethnic or racial group was excluded.	Age, rate of current medication use, gender, FSIQ, Education, occupation and Socioeconomic status
Muller (2007)	<p>Psychiatric assessment, SCID for ADHD, Connors Adult ADHD Rating Scale (CAARS), Self-rating on Wender Utah Rating Scale, Self-Rating Scale for ADHD, STAI, BDI</p> <p>Controls recruited through advertisement in stores and community centres</p>	Diagnosis by psychiatrist		Matched for age, gender, education, and IQ. All ADHD participants on medication. ADHD & controls assessed for anxiety - STAI, depression -BDI, impulsivity - Barratt Impulsivity Scale-11, IQ - MWT - B test covariance analyses

				were performed in order to control for effects of anxiety and depression on cognitive performance
Stavro (2007)	<p>3 stages</p> <ol style="list-style-type: none"> 1. Response to advertisement 2. Telephone screening – age 18-37, English speaking, no sensory-motor problems, no neurological illness 3. Questionnaires, K-SADS for ADHD, SCID for Axis I disorders, SCID II for personality disorders, self-report & interview with 2nd informant. Barkley & Murphy, Connors, Achenbach & Brown Rating Scales, retrospective assessment & informant interviews 4. Brief screen of anti-social behaviour <p>Diagnostic Team of Psychiatrist and clinical psychologist provided 'best estimate' diagnosis independently & interrater kappa checked</p>	Masters level clinician with extensive training	<p>Additional exclusionary criteria for ADHD & non-ADHD group: current major depressive or manic/hypomanic episode, acutely substance dependent, history of psychosis, autism, head injury with loss of consciousness, sensory-motor handicap, neurological illness, native language not English, FSIQ <75, currently prescribed antipsychotic, antidepressant or anticonvulsant medication</p> <p>Additional exclusionary criteria for non-ADHD group: antisocial or borderline personality disorder, past bipolar disorder or previously diagnosed LD, current major depression, taking long-acting psychoactive medications that would affect neuropsychological test performance.</p> <p>ADHD group on medication performed neuropsychological tests after between 18 and 184 hours washout</p>	Age, years of education, gender, ethnicity, marital status, FSIQ,
Bramham (2009)	<p>Establishment of childhood history of ADHD: Barkley & Connors Rating Scales completed retrospectively by participant and informant, Interview – participant & informant, school reports, any other objective evidence</p> <p>Current symptoms: Barkley & Connors Rating Scales over last 6 months, CPT & MFFT</p> <p>Control: no history of neurodevelopmental disorders</p>		<p>Exclusion criteria for all groups: FSIQ<70, history of severe psychiatric disorder e.g. schizophrenia, bipolar, major depression, substance misuse disorder, history of physical or neurological impairments e.g. head injury, epilepsy, genetic disorders e.g. fragile X</p> <p>48 hour medication washout</p>	Age, gender,

Barkley (2010)	SCID for ADHD incl. Demographics, education & work history, current & prior psychiatric history, driving history, money management, drug use and abuse, dating & marital history, antisocial activities	Diagnostic interview - Psychiatrist IQ- Masters level assistant psychologist	Excluded if: FSIQ<80 on Shipley institute of Living Scale, have sensory deficits, significant & obvious neurological conditions, significant language disorders, or chronic and serious medical conditions, e.g. diabetes, cancer, autism, psychosis	Age, education, IQ, employment, Hollingshead Index of Social Position, gender, ethnicity, current psychiatric medication status,
Boonstra (2010)	SCID for ADHD & comorbid disorders, Dutch Diagnostic Interview Schedule for retrospective diagnosis of ADHD, Oppositional defiant disorder, conduct disorder and current diagnosis of antisocial personality disorder. Composite International Diagnostic Interview for Axis I psychiatric disorders, International Personality Disorder Examination for borderline and antisocial personality disorders. ADHD Rating Scale to assess current ADHD. Sheehan Disability Scale to assess level of associated impairment. Global Assessment of Functioning Scale.	Interview – psychiatrists Tests – Boonstra or trained masters student	Inclusion criteria for ADHD, participants: had to meet at least 5 out of 9 DSM-IV criteria for inattention, at least 5 out of 9 DSM-IV criteria for hyperactivity-impulsivity or both based on the ADHD Rating Scale. Meet at least 6 out of 9 DSM-IV criteria for inattention, at least 6 out of 9 DSM-IV criteria for hyperactivity-impulsivity or both based on the Diagnostic Interview Scale, or both Describe a chronic persistent course of ADHD symptoms from childhood to adulthood Have a moderate to severe level of impairment attributed to ADHD symptoms No history or current use of ADHD medication No current use of psychotropic medication or in the past month Inclusion criteria for controls : Screened to exclude ADHD & other psychiatric disorders, currently or ADHD in childhood. Score below 60 th percentile on ADHD Rating Scale. Score <5 on GHQ, consume <15/21 units of alcohol per week for women and men respectively. Controls excluded if they used any drugs or psychotropic medication, if they had ever received a psychiatric diagnosis, received care for mental health problems in the previous 3 years. FSIQ<70	Age, gender, FSIQ, comorbid disorders, mood, anxiety, substance abuse, substance dependence disorders, OCD, Bulimia nervosa, PTSD. Fatigue during testing
In de Braek (2011)	SCID with participant and informant. Diagnostic assessment of standardised psychiatric and neuropsychological diagnostic & research protocol. Self-report & parent Rating Scales	Interview – Health Psychologist Diagnostic tests reviewed by Psychiatrists and Health Psychologists	Inclusion criteria for adult ADHD: had to meet at least 5 out of 9 DSM-IV criteria. Significant difference between ADHD and non-ADHD groups on number of criteria in childhood and number of attention deficit criteria in adulthood (but not hyperactivity/impulsivity)	Age, education, gender, IQ and medication. DSM-IV Axis I diagnoses, Adult attention deficit and hyperactivity/impulsivity. Child attention deficit and

				hyperactivity/impulsivity.
Johnston (2011)	ADHD diagnosed by full psychiatric interview, Rating scales of current & childhood behaviour completed by participant & informant, school reports where possible. Based on DSM-IV criteria. ASD excluded by completing the Social Responsiveness Scale – Adult Version (SRS) ASD – ICD-10 criteria. Autism Diagnostic Interview-Revised (ADI-R) and/or Autism Diagnostic Observation Schedule (ADOS). ADHD excluded by completing Barkley Scale for current & childhood symptoms of ADHD	Diagnosed by consultant psychiatrist. Measures administered by assistant psychologists	Excluded if VIQ<80,ASD participants showed ADHD symptoms or ADHD participants showed ASD on measures used. 48 hour medication washout	Verbal IQ, age, gender All measures administered in random order Assessors not blind to diagnosis
Torrvalva (2012)	Neuropsychiatric assessment with participant and informant, neurological examination, neuropsychological evaluation, questionnaires to participant & informant. Based on DSM-IV. Barkley Scale for inattention & hyperactive profiles, Beck Depression Inventory-II Controls – no history of recreational drug abuse, no family history of neurodegenerative or psychiatric disorders	Diagnosis by two 'experts' from INECO	Assessment took place before medication given. Excluded if other possible comorbid psychiatric or neurological disorders	Tests administered over two days in two sessions to control for fatigue. Age, gender, educational status, estimated premorbid IQ (Word Accentuation Test, WAT).
Gonzalez-Gadea (2013)	Neuropsychiatric assessment with participant and informant, neurological examination, neuropsychological evaluation, questionnaires to participant & informant. Based on DSM-IV. Barkley Scale for inattention & hyperactive profiles	Diagnosis by 'experts' from INECO in ADHD & AS	Inclusion for clinical participants: >18, diagnosed with ADHD, AS as per DSM-IV,	Age, gender, handedness, educational status, estimated premorbid IQ (Word Accentuation Test, WAT).

Table 1.3. Summary of Diagnostic Assessment & Matching Factors/Potential Confounds of cases and controls

Table 2.2. Table of Super & Sub Ordinate Themes

	Themes	Code	Reference – Participant & line number
1.	Process of adjustment to ADHD		
	The comparative self	1.1	'I was the weird kid' - Will 130-134; 'I realised how different I was' Hannah 148-157; 'I just thought that's just' Kate 158-159
	Dialectic of diagnosis	1.2	'I had to take a tablet once a day' Hannah 89-93; 'naughty little school children' Martin 51-54; 'I had mixed feelings' Kate 290-298
	The reflected self	1.3	'I wanted to know more about it' Hannah 409-412; 'it's understanding the reason why' Martin 944-945; 'it's like the penny's' Kate 540-543
	Loss and mourning of the potential self	1.4	'I was angry at the world' Kate 841-856; 'I might have been where I am a lot sooner.' Hannah 670-673;
	Self growth	1.5	'there are benefits to it I' Kate 695-700; it was kind of like the silver lining' Hannah 420-431
	Integrated self	1.6	'ADHD is who I am.' Hannah 338-345; 'it didn't match' Kate 919-93
	Denial and distancing	1.7	'I haven't identified as having ADD anymore' Will 193-194; 'I wouldn't let it be a problem as an adult' Will 390-391; 'it seems like sort of a cop out' Luke 1241-1255
2.	Social appraisal		
	Trivialising ADHD	2.2	'I don't think many people realise how much it affects someone' Hannah 459-474; 'when they say I am lazy that is the worst thing' Kate 610-620
	Stigma, labelling and bullying	2.3	'I used to get bullied a lot' Martin 89-93; 'I don't want to be labelled as the girl with ADHD' Hannah 509-518
3.	Self-regulation		
	Attention regulation difficulties	3.1	'I had a terrible time paying attention in class' Will 52-56; 'instead of just looking at the one TV screen I have got about 8' Kate 632-640
	Executive difficulties and social orientation	3.2	'I'm extremely inconsiderate to (my friends' Luke 822-832; 'I think I don't really have a social' Kate 362-369
	Impact on learning	3.3	'so up and down' Kate 303-307; 'Nevertheless still very easily distracted.' Will 77-82
4.	Coping		
	Managing strengths and developing resilience	4.1	'it is such a coping strategy for me' Hannah 925-929; 'I am probably going to say it how it is' Kate 453-466; 'sort of covered for faults and allowed me to play to strengths' Will 697-703
	Developing new perspectives	4.2	'she sort of like made me understand it in a different way' Martin 1062-1064; 'all these people are strange with me' Kate 648-675
	Contextual barriers	4.3	'work really did help my confidence a lot' Hannah 678-681; 'if courses were designed to accommodate people that do things differently.' Luke 969-1010

Table 2.2. Table of Super & Sub Ordinate themes with coding

Appendix IV – Summary of EF Measures

Set Shifting

The Wisconsin Card Sorting Test (WCST) (Grant & Berg, 1948)

The WCST has been a long-standing measure of cognitive flexibility. The test requires participants to sort cards according to colour, shape and number. The participant is required to work out the correct sorting category based on feedback from the test administrator. Five of the studies used this measure (Biederman et al., 2006; Stavro et al., 2007; Boonstra et al., Torralva et al. 2012 and Gonzalez-Gadea et al.' 2013).

Trail Making Test (TMT, Reitan, 1958)

The Trail-Making Test (TMT) measures abilities including complex attention, psychomotor speed, visual scanning, working memory and mental flexibility. The Trail Making test consists of two subtests – A and B. In Trails A, consecutively numbered circles are connected and in Trails B, alternate numbered and alphabetical circles must be connected in order. Seidman (2006) reports that 70% of studies show significantly poorer performance on TMT by adults with ADHD than controls.

The Change Task (CT, Logan & Burkell, 1986).

The Change Task (Logan & Burkell, 1986), is an extension of the Stop Signal Test (Logan, Cowan, & Davis, 1984) in which participants, on hearing a stop signal, are required to withhold a response to a visual stimulus. The Change Task extends this by requiring participants to not only withhold the original response, but to then provide a different response. The Change Task is a measure of set-shifting. (Boonstra et al., 2010).

Five Point Test (5PT, Regard, Strauss & Knapp, 1982)

The 5PT is a test of figural fluency. It requires the participant to generate as many different designs as possible in three minutes by connecting five dots which are presented as they would be on a dice.

Planning, goal-setting and problem-solving

Behavioural Assessment of Dysexecutive Syndrome (BADS, Wilson, Alderman, Burgess, Emslie, & Evans, 1997)

The Behavioural Assessment of the Dysexecutive Syndrome (BADS, Wilson et al., 1996, 1998) has a questionnaire (the DEX) and six subtests which consider a range of executive domains including cognitive flexibility, planning, behaviour monitoring and problem solving. BADS aims to predict everyday difficulties resulting from Executive Function deficits. The subtests are Rule Shift, Action Program, Key Search, Temporal Judgement, Zoo-Map and Six Elements Test some of which may assess more than one domain of EF. For example the Zoo Map assesses planning, problem solving, and monitoring ability. The DEX has two versions, one for completion by the participant and one by an informant. BADS was designed to have high ecological validity (Norris & Tate, 2000).

Tower of London (TOL, Shallice, 1982)

TOL is a test of planning. It is a practical test consisting of a board with three pegs. The test requires manipulation of three discs on the pegs to form an arrangement as shown on a diagram. This must be done in the fewest number of moves. The test requires forward planning in order to achieve the goal (Barkley, Murphy & Fischer, 2008; Phillips, 1997)

Self-Ordered Pointing Test (SOPT, Petrides & Milner, 1982)

The SOPT assesses the use of plans and strategies and the ability to monitor performance in order to regulate behaviour. It is also a test of visual working memory (Geurts et al.' 2005). The participant is presented with stimulus cards, usually containing abstract designs. These are presented in a random order, one page at a time (Bryan & Luszcz, 2001). The position of the designs varies on each card and the participant is required, to point to a different design on each card. The task requires participants to remember the designs they have already selected in order not to re-select them and involves development of a strategy to enable them to select each design during a trial (Bryan & Luszcz, 2001).

Working memory

This is the ability to retain information temporarily in memory, whilst using that information to learn, understand, problem solve and formulate and act on goals (Baddeley & Logie, 1999)

Digit span backwards

This is a subtest from the Wechsler Adult Intelligence Scale-Fourth Edition (WAIS- IV). In this task, a series of numbers are presented verbally to the participant at one second intervals. The series increases in length and the participant is required to repeat the series back in reverse order. This requires information to be held in mind and manipulated so that it can be presented back in the reverse order (Brocki & Bohlin, 2004).

Trail Making Test (TMT, Reitan, 1958)

This task is described above (see 'Set-shifting') and is also considered to be a measure of set-shifting (Sanchez- Cubillo, Perianez, Adrover-Roig, Rodriguez-Sanchez, Rios-Lago, Tirapu & Bar, 2009).

Response Inhibition and monitoring

Response inhibition is the ability to suppress responses which are inappropriate to the situation or context. It enables behaviour which is goal-directed and flexible to the situation (Verbruggen & Logan, 2009).

Stroop Colour-Word Test (SCWT, Stroop, 1935)

The most frequently used measure of response inhibition was the Stroop Colour-Word Test (SCWT) used by 67% of the studies. The participant is usually presented with three cards. They are required to read colour names from the first card and name colours from the second card. The third card contains the name of colours written in coloured ink which does not usually correspond to the colour it is naming. The participant is required to name the colour of the ink, not read the word. Card three provides the interference condition (Burgess, 2010).

Stop-signal reaction time (SSRT, Logan, Schachar & Tannock, 1997)

In this task, participants are required to discriminate between an O and an X on a screen and press corresponding buttons. This is called a 'Go' task. However, when a tone sounds, they are required to inhibit the response to the 'Go' task. This is the 'Stop' task. The 'Stop' task measures response inhibition.

Hayling Sentence Completion Test (HSCT, Burgess and Shallice, 1997)

The Hayling Sentence completion task (HSCT) has two parts to the task. Firstly, the participant is asked to complete sentences with the last word missing with an appropriate word. The second part of the task requires the participant to complete sentences with an inappropriate word and inhibit the more appropriate response.

Continuous Performance Test (CPT, Conners, 1995).

There are several versions of this task. The basic premise is that participants are required to maintain vigilance over an extended period of time (e.g. > 15 minutes for adult tests). An example of the task would be that participants are required to respond to a stimulus letter, but only if it is preceded by certain other letters on a computer screen. The stimulus occurs less than 25% of the time. This task is also able to assess response inhibition by reversing the process and asking participants to respond to all stimuli, with a few rare exceptions (Boonstra et al.' 2010; Nigg, 2006).

Circle Drawing Task (CDT, Bachorowski & Newman, 1990)

This is a response inhibition task where participants are asked to trace around a large circle as slowly as possible. The time taken is compared to time taken to trace the circle without the instruction to do it as slowly as possible. The time difference between the two attempts is a measure of the participant's ability to inhibit their response (Guerts et al., 2005).

Matching Familiar Figures Test (MFFT, Kagan, Rosman, Day, Albert, & Phillips, 1964)

The Matching Familiar Figures Test is a measure of reflection versus impulsivity. During this task, participants are shown a picture of an everyday object and a number of similar pictures. They are required to select the picture which exactly matches the target picture. People who are slower at this task tend to be reflective and those who choose quickly are more impulsive (Johnston et al., 2011).

Ruff Figural Fluency Test (RFFT, Ruff, 1988)

The RFFT is similar to the 5-Point Test and assesses figural fluency. It requires participants to generate as many unique drawings as possible using templates containing five dots. Participants are given five minutes to complete the task which assesses ability to self-monitor and regulate responding. The number of repeated designs is subtracted from the total number of designs to give the score (Ross, Foard, Hiott & Vincent, 2003).

Verbal fluency

The Controlled Oral Word Association Test (COWAT, Spreen & Benton, 1977).

In this test participants are given 60 seconds per letter to produce as many words as they can that begin with the letters F, A, and S. The score is the total number of words produced excluding repeated words (Chaytor 2004).

Appendix V – Interview Guide

Interview Guide

Demographic Information

Age **Age at diagnosis**.....

Gender..... **Marital Status**.....

Highest educational attainment

Interview procedure

- Introduce myself to the participant
- Discuss 'Participant Information' and offer opportunity for further questions or clarification to ensure participant understands the purpose of the study.
- Obtain signed consent
- Proceed with taped interview. Participant to discuss experiences in an unstructured way, if they wish. Prompts may be used from the Interview Guide to encourage sufficient breadth and depth of discussion.

Interview Guide

Primary Research Objective Prompts

1. How did you first become aware that you have ADHD? E.g. what did you notice that led to you finding out that you had ADHD?
2. Could you describe your experience of being an adult with ADHD?
Further Prompts, if needed:
 - In respect of education?
 - Work and employment opportunities?
 - Choice of hobbies and pastimes?
 - Relationships?
 - Mood?
3. Are there any other ways in which you feel that ADHD has affected your life as an adult? (E.g. on finances, self-esteem, positive effects, etc.)

Secondary Research Objective Prompts

4. Have you ever needed to access support or services as a result of your ADHD?
5. If yes, what was your experience of accessing support and/or services?
6. What, in your opinion, would be the ideal support/mental health services to help adults living with ADHD?

Appendix VI – Participant Information Sheet

Adults' Experiences of Having Attention Deficit Hyperactivity Disorder (ADHD): A Qualitative Study

Introduction

I would like to invite you to participate in this study, which is concerned with finding out about your experiences of living with ADHD as an adult and the way you feel this has affected your life. I am also interested in your views about what support or services you have accessed or would like to be able to access should you need it.

Why am I doing the study?

The study is part of my Doctorate in Clinical Psychology at Staffordshire University. It is hoped that the study could provide useful information about the way that ADHD impacts on adults with the condition and what sort of support services they would want to access.

Do you have to take part in this study?

It is up to you to decide to join the study. If you agree to take part, I will then ask you to sign a consent form. You are free to withdraw at any time, without giving a reason. This would not affect any care that you receive.

What will you have to do if you agree to take part?

Please contact me by email at the following address so that I know you are interested. (jbull1@nhs.net)

1. We will arrange to meet at a time that is convenient for you.
2. There will be one, single interview with myself during which I will ask you questions about your experiences. Some additional information such as your current age, your age when diagnosed, your marital Status, highest educational attainment, etc. will also be requested.
The interview is expected to last about an hour and is a one-off event. The actual length of the interview may vary depending on the amount of information you wish to discuss. The interview will be recorded.
3. You may request to read the interview through once it has been written up.
4. Quotes from your interview may be used in a report, but will be anonymous.
5. When I have completed the study I will produce a summary of the findings which I will be happy to send to you if you wish.
6. The study may be put forward for publication, but you will not be identified in the report.

How much of your time will participation involve?

One interview lasting about one hour, but this may be more or less depending on how much information you wish to discuss.

Will your participation in the study remain confidential?

If you agree to take part, your name will not be recorded on the questionnaires and the information will not be disclosed to other parties. Your responses to the questions will be used for the purpose of this study only. Quotes may be used from your responses in the final report. You can be assured that if you take part in the study you will remain anonymous.

What are the advantages of taking part?

You may find the study interesting and enjoy having the opportunity to talk about the way that ADHD affects your life. Once the study is finished it could provide

information about ADHD in adults, which is useful to help others, such as health professionals, understand more about the condition. It may also provide useful information to guide the planning of new services.

Are there any disadvantages of taking part?

It could be that you are not comfortable talking about your ADHD and the way it has affected your life.

Do you have to take part in the study?

No, your participation in this study is entirely voluntary. You are not obliged to take part, you have been approached as an adult with ADHD with a view that you might be interested in taking part; this does not mean you have to.

If you do not wish to take part you do not have to give a reason and you will not be contacted again.

Similarly, if you do agree to participate you are free to withdraw from the study if you change your mind up to the point that the report is written.

What happens if you find discussing your condition upsetting?

You may find it quite challenging to discuss the ways in which having ADHD affects your life. Should this happen, you will be given the opportunity to end the interview.

You will also be offered the contact details for a national Adult ADHD helpline such as ADDISS, The National Attention Deficit Disorder Information and Support Service, Telephone: 020 8952 2800, e-mail: info@addiss.co.uk.

What happens now?

If you are interested in taking part in the study you are asked to contact me by email (jbull1@nhs.net). Once I have received your email I will contact you so that you can ask any further questions or request more information about the study. If you wish to take part in the study, we can arrange to meet at a time that is convenient for both of us. We can then hold the interview. If you decide you would rather not participate in this study then no action is required.

Researcher: Julie Bull

Clinical Psychologist in Training, Staffordshire University

Email address for correspondence: (jbull1@nhs.net).

Supervisor: Professor Helen Dent

Course Director, Doctorate in Clinical Psychology, R207, Faculty of Sciences, Staffordshire University, Leek Road, Stoke-on-Trent, ST4 2DF

Email address for correspondence: H.R.Dent@staffs.ac.uk

Appendix VII – Consent Form

Informed Consent Form

Research Project: Adults' Experiences of Having ADHD

Researcher: Julie Bull

1. I have read the information sheet for the above study and have had the opportunity to ask questions. **YES/NO**
2. I understand that my participation is voluntary and that I am free to withdraw from the study, without giving any reason. **YES/NO**
3. I understand that quotes from my interview may be used in the report. **YES/NO**
4. I have had the opportunity to ask any questions I may have and I agree to take part in the above study. **YES/NO**

Participant's name:

Date:

Signed:

Researcher:

Date:

Signed:

Researcher: Julie Bull
Clinical Psychologist in Training, Staffordshire University
Email address for correspondence: jbull1@nhs.net

Supervisor: Professor Helen Dent
Course Director, Doctorate in Clinical Psychology, R207, Faculty of Sciences,
Staffordshire University, Leek Road, Stoke-on-Trent, ST4 2DF

Email address for correspondence: H.R.Dent@staffs.ac.uk

Copy:

1. For participant
2. For researcher

Appendix VIII – Ethical Approvals



Faculty of Health/Faculty of Sciences

INDEPENDENT PEER REVIEW APPROVAL FEEDBACK

Student Name Julie Bull
Title of Study Adults' Experiences of Having Attention Deficit Hyperactivity Disorder (ADHD): A Qualitative Study
Award Pathway Doctorate in Clinical Psychology
Status of approval: Approved

Action now needed:

You must now apply to the Local Research Ethics Committee (which serves the Trust within which you intend to complete your study) for approval to conduct your study. You must not commence the study without this second approval. To seek approval you will need to complete the application form for the committee and forward copies of your proposal.

Please forward a copy of the letter you receive from the L.R.E.C. to Natalie Lowndes, Clinical Psychology, College Road as soon as possible after you have received approval. Once you have received L.R.E.C. approval you can commence the implementation phase of your study. You should note that any divergence from the approved procedures and research method will invalidate any insurance and liability cover from the University. You should, therefore, notify the Panel of any significant divergence from this approved proposal.

It is now possible to begin writing your dissertation and you may wish to consult with your supervisor on this matter.

Thank you for forwarding the amendments requested by the Independent Peer Review Panel (IPR)

A handwritten signature in black ink, appearing to read 'Vish Unnithan'.

PP - **Signed:** Vish Unnithan
Chair of the Faculty of Health Sciences/Faculty of Sciences IPR Panel

Date: 5th October 2012



Health Research Authority

NRES Committee South Central - Berkshire B

Bristol REC Centre
Whitefriars
Level 3, Block B
Lewins Mead
Bristol
BS1 2NT

Telephone: 0117 342 1362
Facsimile: 0117 342 0445

07 November 2012

Mrs Julie Bull
Clinical Psychologist in Training

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Dear Mrs Bull

Study title: Adults' Experiences of Having Attention Deficit
Hyperactivity Disorder (ADHD): A Qualitative Study
REC reference: 12/SC/0646

The Proportionate Review Sub-committee of the NRES Committee South Central -
Berkshire B reviewed the above application in correspondence.

Ethical opinion

There were no outstanding ethical issues.

On behalf of the Committee, the sub-committee gave a favourable ethical opinion of the
above research on the basis described in the application form, protocol and supporting
documentation, subject to the conditions specified below.

Ethical review of research sites

The favourable opinion applies to all NHS sites taking part in the study, subject to
management permission being obtained from the NHS/HSC R&D office prior to the start of
the study (see "Conditions of the favourable opinion" below).

Conditions of the favourable opinion

The favourable opinion is subject to the following conditions being met prior to the start of
the study.



Health Research Authority

NRES Committee South Central - Berkshire B
Bristol REC Centre
Whiteways
Level 3, Block B
Levins Mead
Bristol
BS1 2N1

Telephone: 0117 3421391
Facsimile: 0117 3426445

20 November 2012

Mrs Julie Bull
Clinical Psychologist in Training

[Redacted address]

Dear Mrs Bull,

Full title of study: Adults' Experiences of Having Attention Deficit
Hyperactivity Disorder (ADHD): A Qualitative Study
REC reference number: 12/SC/0646

Thank you for your email of 19th November 2012. I can confirm the REC has received the documents listed below as evidence of compliance with the approval conditions detailed in our letter dated 05 November 2012. Please note these documents are for information only and have not been reviewed by the committee.

Documents received

The documents received were as follows:

Document	Version	Date
Participant Consent Form	2	01 November 2012
Participant Information Sheet	2	01 November 2012

You should ensure that the sponsor has a copy of the final documentation for the study. It is the sponsor's responsibility to ensure that the documentation is made available to R&D offices at all participating sites.

12/SC/0646

Please quote this number on all correspondence

Appendix IX – Guidelines to Authors:

Journal of Attention Disorders

British Journal of Psychology

Journal of Attention Disorders - SAGE Publications

A Journal of Theoretical and Applied Science

Downloaded from <http://www.uk.sagepub.com/journals>

Aims & Scope

Journal of Attention Disorders (JAD) focuses on basic and applied science concerning attention and related functions in children, adolescents, and adults. *JAD* publishes articles including, but not limited to, diagnosis, comorbidity, neuropsychological functioning, psychopharmacology, and psychosocial issues. The journal welcomes manuscripts addressing timely, notable topics in practice, policy, and theory, as well as review articles, commentaries, in-depth analyses, empirical research articles, and case presentations or program evaluations that illustrate theoretical issues or new phenomena.

Submission

Style for all submissions must follow that of the *Publication Manual of the American Psychological Association* (5th ed.). Submission to the journal implies that the manuscript has not been published elsewhere and is not in consideration by any other journal. Submission to the Applied Research section should be no more than 30 double-spaced pages, including an abstract of 150 words or less using a sectional guideline (Objective, Method, Results, and Conclusion), a brief biographical statement for each contributing author, endnotes, references, tables, and figures, all on separate pages. Author names and affiliations should appear on a separate cover page and the manuscript should be formatted for anonymous review.

Journal of Attention Disorders only accepts submissions electronically. Electronic submissions should be sent to <http://mc.manuscriptcentral.com/jad>. Submissions may be in Microsoft Word or WordPerfect.

Featured Sections

JAD features applied research. *JAD* additionally publishes unsolicited articles in three other sections: Research Into Practice, Research Briefs, and Literature Reviews. The first, Research Into Practice, should focus on well-developed areas of research with an emphasis on application and evaluation of practice. Specifically, the goal of these submissions is to illustrate how relevant conceptual and empirical principles can be implemented in evaluating and practice. Manuscripts should present theoretically sound and empirically documented principles and illustrate how these have been synthesized into practiced and proven interventions.

The journal is also interested in publishing articles in a Research Briefs section promoting the dissemination of new, novel, or otherwise important research information in a format that does not require extensive journal space. Research briefs should be substantially shorter than general articles: no longer than 15 pages, including tables, figures, and references. When submitting a manuscript for consideration as a research brief, the author should so stipulate and agree not to publish a more comprehensive version of the article in another source. Finally, the journal is interested in publishing literature reviews. These reviews should be no more than 50 double-spaced pages. Authors considering writing a literature review should consider contacting the editor before submission. *JAD* will also publish relevant letters describing interesting cases of developments in the field relative to clinical

practice.

The journal also welcomes Letters to the Editor of no more than 300 words. Letters will be published at the editor's discretion. Opinion essays on relevant topics in ADHD are published by invitation only.

British Journal of Psychology

Taken from the web page

<http://onlinelibrary.wiley.com/journal/10.1111/%28ISSN%292044-8295/homepage/ForAuthors.html>

Author Guidelines

The Editorial Board of the British Journal of Psychology is prepared to consider for publication:

- (a) reports of empirical studies likely to further our understanding of psychology
- (b) critical reviews of the literature
- (c) theoretical contributions Papers will be evaluated by the Editorial Board and referees in terms of scientific merit, readability, and interest to a general readership.

1. Circulation

The circulation of the Journal is worldwide. Papers are invited and encouraged from authors throughout the world.

2. Length

Papers should normally be no more than **8000** words (excluding the abstract, reference list, tables and figures), although the Editor retains discretion to publish papers beyond this length in cases where the clear and concise expression of the scientific content requires greater length.

3. Submission and reviewing

All manuscripts must be submitted via <http://www.editorialmanager.com/bjp/>. The Journal operates a policy of anonymous peer review. Before submitting, please read the [terms and conditions of submission](#) and the [declaration of competing interests](#).

4. Manuscript requirements

- Contributions must be typed in double spacing with wide margins. All sheets must be numbered.
- Manuscripts should be preceded by a title page which includes a full list of authors and their affiliations, as well as the corresponding author's contact details. A template can be downloaded from [here](#).
- Tables should be typed in double spacing, each on a separate page with a self-explanatory title. Tables should be comprehensible without reference to the text. They should be placed at the end of the manuscript with their approximate locations indicated in the text.
- Figures can be included at the end of the document or attached as separate files, carefully labelled in initial capital/lower case lettering with symbols in a form consistent with text use. Unnecessary background patterns, lines and shading should be avoided. Captions should be listed on a separate sheet. The resolution of digital images must be at least 300 dpi.
- All articles should be preceded by an Abstract of between 100 and 200 words, giving a concise statement of the intention, results or conclusions of the article.
- For reference citations, please use APA style. Particular care should be taken to ensure that references are accurate and complete. Give all journal titles in full and provide DOI numbers where possible for journal articles.