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Georgiana Thomas, M.A. (Joint Hons), M.Sc.

**Understanding Attention Deficit Hyperactivity Disorder (ADHD) in the
context of Parental Attachment Styles**

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A Literature Review

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Section B: Parental Attachment Styles and parent-reported ADHD symptoms in
their children

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September 2014

SALOMONS

CANTERBURY CHRIST CHURCH UNIVERSITY

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Candidate name: GEORGIANA THOMAS

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Summary of the Portfolio

This thesis examines the relationship between parental attachment style and the severity of ADHD symptoms in children according to parent report.

Section A reviews the literature pertaining to the relationship between attachment and Attention Deficit Hyperactivity Disorder (ADHD) and suggests that there is empirical support for the relationship between ADHD and insecure attachment styles but a paucity of research which explores the relationship between adult attachment styles, parenting, ADHD and possible intergenerational links.

Section B investigates the relationship between parental attachment styles, including overall attachment vulnerability and Anxious and Avoidant subtypes, and their relationship to ADHD symptoms of hyperactivity, inattention and aggression. It employs between groups and correlational components with parents of children with a diagnosis of ADHD and controls matched for age, education, and intellectual ability. The results indicate that overall insecure attachment may be related to greater parent reported hyperactivity and aggression, but not inattention.

Section C provides a critical appraisal of the research process by answering four specific questions.

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Georgiana Thomas M.A. (Joint Hons.), M.Sc.

Major Research Project

Section A: Literature Review

Attachment and Attention Deficit Hyperactivity Disorder (ADHD)

A review of the evidence base

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September 2014

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CANTERBURY CHRIST CHURCH UNIVERSITY

Abbreviated terms

ADHD = Attention Deficit Hyperactivity Disorder

DA = Disorganised Attachment

CD= Conduct disorder

ODD = Oppositional Defiant Disorder

Abstract

According to attachment theory the parent-child relationship provides the foundation for emotion regulation skills, with infants seeking regulation through the contingent responsiveness of the caregiver. Attention Deficit Hyperactivity Disorder (ADHD) is characterized by poor affect regulation and developmentally inappropriate levels of hyperactivity- impulsivity and inattention. This review asks what features of the attachment relationship might be associated with ADHD symptoms and diagnosis in school-age children. The PsycINFO, Ovid Medline, SAGE, SciVERSE Science Direct (Elsevier) and EMBASE databases were searched for papers published between 1993 and 2013, and 15 papers were included in the review. ADHD and attachment insecurity demonstrate considerable symptom overlap and children with ADHD typically show a higher prevalence of attachment insecurity than normal controls. Longitudinal studies suggest that intrusive or insensitive early parent interactions may interfere with the normal development of regulatory skills, but are limited as only a small proportion of children show clinically meaningful symptoms. This review suggests that there is a link between disorganised attachment (DA) and ADHD symptoms, with implications for early parent-child interactions, as well as transactions between child temperament and parenting. Adult attachment may also be associated with child ADHD but there is a paucity of research exploring this. The review concludes with implications for clinical assessment, interventions and future research.

1.0. Introduction

ADHD is associated with disturbances in family functioning, disrupted parent–child relationships, reduced parenting self-efficacy and increased stress levels (Johnston & Mash, 2001). Children with ADHD often elicit negative reactions from parents, who tend to be more controlling, disapproving and rejecting than parents of children without ADHD (Johnston & Mash, 2001; Mano & Uno, 2007). Parenting is likely to be linked to greater difficulty in managing ADHD as well as contributing to its aetiology. Children with ADHD typically grow up in families without a healthy relationship between two adults, exposure to yelling, criticism and violence (Ladnier & Massanari, 2000). It remains unclear, however, how these disturbances are related to children’s behaviour and whether the developmental mechanisms that underlie associations between parenting and ADHD initiate, maintain or result from the disorder (Johnston & Mash, 2001).

Despite evidence for poor parenting practices (Johnston & Mash, 2001) it is unlikely that parenting causes ADHD (Barkley, 1998). Transactional models propose cycles between parents and children, with coercive and hostile parenting practices associated with later comorbid conduct disorder (CD) and oppositional defiant disorder (ODD) (Whalen & Henker, 1999). However, this research is limited in addressing causality or explaining how a negative parent-child cycle is initially established. Some studies have instead focused on early parent-child interactions, associated with the development of affect regulation skills, in order to establish aetiological factors associated with child hyperactivity and inattention.

2.0. Attachment theory

Attachment theory (Bowlby, 1969/1982, 1973, 1980) provides a developmental framework for understanding how individuals form close relationships. Motivated by a

need for safety within the context of a protective bond with the primary caregiver, usually the mother, the child's internalized experience of this early relationship develops as an "internal working model" (IWM), a cognitive-emotional template, that informs expectations in future relationships. Bowlby (1982) proposed that infants are born with an innate repertoire of attachment behaviours for seeking and maintaining proximity to caregivers in times of stress and separation, which are designed to protect them from physical and psychological threats and alleviate distress. When successful these strategies result in a sense of attachment security, that the self is loveable and others can be relied upon for protection (Bowlby, 1988). A separation-reunion experiment, the Strange Situation paradigm (SSP) (Ainsworth et al., 1978), established the following four infant attachment categories; Secure, Insecure-Avoidant, Insecure-Ambivalent, Insecure-Disorganised (Ainsworth, Bell & Stayton, 1974; Main & Solomon, 1990). These attachment patterns have been shown to be stable across the lifespan, and are observed cross-culturally and inter-generationally (van Ijzendoorn, 1995; Prior & Glaser, 2006). See Appendix A for attachment classifications according to measures of child and adult attachment.

When a child experiences attachment figures as insensitive or rejecting they are likely to develop an Avoidant attachment, minimizing negative emotions in the presence of an unresponsive caregiver. A child with an Ambivalent (Anxious) attachment experiences its attachment figures as unpredictable, both competent and reliable and alternately, inadequate and unreliable, and maximises their expression of negative emotions to elicit attention from an inconsistently responsive parent (Main, 1990). Insecure attachment behaviours are organised inasmuch as they each allow for the maximum proximity to the parent based on the child's anticipated response to distress (Main, 1990). However, a child who is neglected, abused, or traumatized will develop a Disorganised Attachment (DA). For this child the caregiver providing them with safety is the same who threatens and endangers them, and they may be frightened and/or hypervigilant in the presence

of the attachment figure. DA is identified by the absence of an organised attachment strategy, characterized by incoherent child behaviour. The inability to organise a response to conflicting parental messages represents the “breakdown of an otherwise consistent and organised strategy of emotional regulation” (van Ijzendoorn et al., 1999, p226).

2.1. Measurement of attachment

Child attachment measures are usually observational or representational (story stems, picture completion tasks), with interview methods applicable in middle childhood (7 to 11 years) (Child Attachment Interview; Target, Fonagy & Shmueli-Goetz, 2003). While the SSP (Ainsworth et al., 1978) provides a categorization of security within an observed parent-child relationship, representational and interview methods propose to tap into the IWMs of attachment within the child. Outcomes of these measures are not necessarily equivalent with some producing broad categories and others scores on attachment dimensions of avoidance and anxiety.

Child attachment can be captured by discrete or continuous measures, resulting in either a categorical classification or an overall score. Continuous measures of attachment have demonstrated adequate psychometric properties and can be used either individually or in conjunction with other attachment measures (Richters et al., 1998). For further discussion of the debate around categorical versus continuous attachment measures see Fraley & Spieker (2003).

2.2. Attachment and affect regulation

Caregivers regulate their infant’s arousal through responding to infant cues and by providing stimulation or reducing it based on the infant’s state (Brazelton, Koslowski & Main, 1974; Stern, 1977). Inappropriate responses, such as stimulating an over-aroused

infant, or intrusive interactions such as feeding a baby when it is trying to turn away, may lead to un-modulated state changes and internalized process that prevents the infant from adequately regulating their own arousal, resulting in restlessness, impulsivity and distractibility (Jacobvitz & Sroufe, 1987). Transition from co-regulation of emotion to self-control is attributed to three processes: i) exposure to experiences which enrich regulatory capacities; ii) using adults as a resource for regulating distress; iii) internalising the regulatory functions of the adult. Therefore the adult's competencies are incorporated into the child's sense of self and the development of self-regulation relies on attachment-figure sensitivity and availability (Mikulincer & Shaver, 2002). These early processes are observable in parent-child interactions such as responsiveness, rejection, stimulation, sensitivity, intrusiveness and contingency (De Wolff & van Ijzendoorn, 1997).

3.0. ADHD: Measurement and limitations

ADHD, defined by the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV-TR; APA, 2000) and hyperkinetic disorder as defined by the International Classification of Diseases, 10th revision (ICD-10; World Health Organization, 1992), are based on a cluster of maladaptive, developmentally inappropriate symptoms of hyperactivity, impulsivity and inattention across a number of social contexts (APA, 2000; NICE, 2013). ADHD is classified according to 3 subtypes: hyperactive-impulsive, inattentive or combined. Hyperkinetic disorder is a severe subtype of the combined diagnosis and although there is considerable symptom overlap between the two disorders, ICD-10 has strict exclusionary criteria for hyperkinetic disorder, which precludes any coexisting disorder such as learning difficulties or conduct problems. The majority of research into disorders of hyperactivity and inattention use DSM-IV assessment (APA, 2000) and hyperkinetic disorder is rarely addressed in the same literature. As ADHD is the more prevalent diagnosis, it is the focus of the current paper.

ADHD is more common among boys than girls (Hinshaw, 1994) and the severity of the disorder is assessed according to DSM-IV-TR and DSM-V criteria (APA, 2000; 2013) (Appendix B) and standardised measures such as the Conners' ADHD/DSM-IV Scales (CADS; Conners, 1997). Symptoms are commonly measured in research by the Child Behaviour Check List (CBCL; Achenbach, 1991), which has subscales relating to hyperactivity and inattention, based on ADHD diagnostic criteria set out in the DSM-III-R (APA, 1987).

The biomedical model of ADHD remains widely accepted, asserting that it is genetically inherited, resulting in early neurological impairment and subsequent difficulties with focusing, impulse control and self-regulating (Barkley, 1998). However a number of studies found significant overlap in symptoms with children subjected to adverse life experiences of neglect and abuse (Bowlby, 1973; Rutter, Kreppner & O'Connor, 2001), and children with insecure attachment patterns (Stiefel, 1997). Some research has suggested that ADHD behaviours might be adaptive within certain family environments, such as demanding interactions in order to seek attention from inconsistently available parents (Dallos & Smart, 2011).

According to NICE Guidelines (2008), a child ADHD diagnosis should include assessment of any coexisting conditions, social or familial circumstances, and "assessment of their parents' or carers' mental health" (p.18, 2008). Therefore clinicians might not diagnose a child if other factors could account for their symptoms. This might differentiate children who have symptoms of ADHD from those with a diagnosis of ADHD. However, despite this being best clinical practice, DSM-V (APA 2013) criteria only requires symptoms to not be better explained by another mental health disorder, which would not necessarily include assessment of attachment, or early parent-child interactions. Therefore although diagnosis should differentiate clinical ADHD from symptomatic ADHD by the absence of attachment disorder, it is not routinely assessed by any formal

measure and therefore may still be a factor when considering the aetiology of both symptomatic and clinical ADHD. However, differences between these groups may also be explained by the preclusion of confounding familial factors in ADHD diagnosis.

4.0. Rationale for the Review

The aim of the present paper is to selectively review and critically evaluate the research exploring attachment and early parent-child interactions associated with ADHD symptoms. The current review will attempt to answer the following question: “What features of the attachment relationship and early parent-child interactions are associated with ADHD symptoms and ADHD diagnosis in school-age children?” Furthermore, “What are the possible mechanisms by which these symptoms arise?” As ADHD is often co-morbid with conduct problems (Nylund, 2000; Singh, 2011), and hyperactivity is often included in wider assessment of general externalizing behaviour, this review will also evaluate the literature pertaining to attachment and aggression when it is included as part of a wider assessment of ADHD symptoms. All other literature related to externalizing disorders in general is excluded.

5.0. Literature Search

The PsycINFO, Ovid Medline, SAGE, SciVERSE Science Direct (Elsevier) and EMBASE databases were searched for relevant abstracts using the terms Attachment and ADHD, as well as related terms such as *inattention*, *hyperactivity*, and *attention deficit disorder*, *attachment disorder*, *parent-child interactions*, *att- style*, *att- representation*, *att- relationship*. Searches were limited to the last 20 years up to 2013. One earlier study was included (Jacobvitz & Sroufe, 1987) as it was the preliminary study of another article in the review (Carlson, Jacobvitz & Sroufe, 1995). See Appendix C for details of search strategy.

Three literature searches resulted in 337 articles. Articles were excluded if they did not refer to both attachment or parent-child interaction and ADHD in the Title or Abstract leaving 58 studies. Abstracts and Methods were screened for relevant variables and articles were included if they measured early interactions in the attachment relationship (e.g. sensitivity, responsiveness), but were excluded if limited to parenting. No formal quality criteria was used in this review, but the following limits were applied: use of standardised valid and reliable measures of ADHD symptoms and attachment; published in a scientific peer-reviewed journal; and translated into English. Case studies were also included if they met the search criteria. Reference sections of relevant literature reviews (Guttman-Steinmetz & Crowell, 2006; Franc et al., 2009) were searched by hand and one additional article was found. The articles were considered relevant if they contributed to understanding of the aetiology of ADHD symptoms in school-age children. Prospective studies have been prioritised as they are able to make assumptions about causality. As ADHD emerges before 12 years, studies with exclusively adolescent samples were excluded. Adolescence is a time of significant emotional and cognitive change (Blakemore & Choudhury, 2006) and increased difficulties in the parent-child relationship (Steinberg, 2001). Therefore it would be difficult to distinguish attachment features related to ADHD rather than more general problems associated with adolescence. Overall 15 studies were included. See Appendix D for a summary of studies.

6.0. Attachment and ADHD

6.1. Insecure child attachment and ADHD diagnosis

A study of 19 boys (aged 5-10 years) with an ADHD diagnosis (DSM-IV; APA, 2000) compared to age-matched controls, using three representational measures of attachment, found that children with ADHD were significantly more insecure (Clarke et al., 2002), and used significantly more coping strategies involving retribution, hostility

or hatred ($F=4.62$, $p<.05$) than controls. Insecure attachment was characterised by “heightened emotional expression characterized by strong, out of control affects”, associated with an ambivalent or disorganised style and consistent with an affect dysregulation model of ADHD. The researchers concluded that impulsivity, hyperactivity and oppositionality are strategic behaviours for gaining attention from less available parents. Limitations were the small sample, precluding analysis by ADHD subtype, and no measures of parent variables such as availability. The majority of the clinical sample had a comorbid diagnosis (ODD, learning difficulties, depression) making these findings less generalisable to all ADHD cases. Comorbidity may account for greater hostility and is a confounding variable when comparing ADHD to non-clinical groups however in this study, findings applied equally to children with and without a comorbid diagnosis. Sixteen of the boys in the ADHD group were taking stimulant medication, which may obscure symptoms under experimental conditions. The researchers concluded that children with ADHD demonstrate insecure IWMs of attachment evident in domains of separation anxiety, self-description, and family disharmony. Over half of the ADHD group also provided predominantly negative descriptions of the parent-child relationship, with parents depicted as unresponsive or unreliable.

A case study of a boy (10 years) with ADHD and his mother explored the function of ADHD symptoms using a dynamic model of attachment (Dynamic-Maturational Model; DMM, Crittenden, 1997, 2001, 2006), which identifies strategic and nonstrategic attachment behaviors. They found that mother and son displayed a “disoriented” attachment characterised by a lack of narrative coherence, with difficulties discriminating between important and unimportant environmental cues, both past and present, and concluded that attachment disorientation and ADHD share parallel deficits in the inability to differentiate between relevant and irrelevant stimuli resulting in difficulties with focusing and attention. In this study maternal anxiety, linked to her own childhood, prevented containment and lead to increased anxiety in the child,

implicating an inter-generationally transmitted anxious attachment pattern. There are inherent difficulties of generalisability in case study designs and these findings do not preclude the possibility of a biological vulnerability to ADHD, which would have emerged regardless of attachment difficulties.

6.2. Attachment and ADHD symptoms

An international adoption study in Spain ($n=58$) explored attachment distributions and ADHD symptoms in a largely female sample (65.5%) (Abrines et al., 2012). The strength of the study was use of validated measures, rigorous attachment interview measures, and a moderate to strong inter-rater agreement (range = .67-.82). Insecurely attached children showed a trend towards more hyperactivity ($t=1.843$, $p=.071$) and were significantly more inattentive ($t=2.94$, $p=.005$) than their secure counterparts. However only 3 children had a clinical diagnosis of ADHD. Participants' pre-adoption care-giving experiences were not known and symptoms may have been related to children's earlier experiences of care. Lack of a control group is a further limitation in establishing whether the link between ADHD symptoms and attachment are associated with adoption experiences. Replicability and clinical generalisability are questionable given the lack of homogeneity within the sample and the high proportion of females, which is untypical of ADHD referrals.

Two prospective studies (Bohlin et al., 2012; Thorell et al., 2012) based on subsamples of a Swedish study, found that DA was longitudinally associated with externalising behaviours and ADHD symptoms. In Bohlin et al. (2012) 65 children (54 boys, 11 girls), 20 with disruptive behaviour problems, were assessed for attachment and poor inhibition and externalizing problems at age 5 years and 5 months, and two years later for ADHD symptoms. DA had a significant effect on ADHD symptoms ($sr^2=.06$, $p<.05$) even when controlling for poor inhibition. ADHD symptoms did not reach clinical levels

and so these findings are not generalisable to clinical populations. They did not control for parental variables, which might have contributed to variability within the sample. The second study explored the same association alongside Executive Function (EF) and found that both DA and EF were independently related to ADHD symptoms. Both studies used representational measures of attachment and DSM-IV (APA, 2000) diagnostic criteria for ADHD, and found that ADHD was primarily related to DA and not insecure attachment, with EF and conduct problems controlled.

In a sample of 61 clinical referrals aged 4-9 years diagnosed with CD (Green, Stanley & Peters, 2007), ADHD was associated with increased DA. However, only 18 cases had an ADHD diagnosis. Disorganisation was predicted by very high maternal expressed emotion (EE), which is characterised by hostility, critical comments and intrusiveness. This is consistent with previous research linking DA to atypical, inconsistent and aggressive parenting (Lyons Ruth & Jacobvitz, 1999). High EE in this study captured maternal behaviours that are consistent with a disorganised adult attachment style (Lyons-Ruth, et al 1999). Therefore ADHD in a high-risk sample of children with CD, DA was associated with greater disorganisation in the context of a disorganised parental attachment style. This supports previous research that comorbid ADHD may be better explained by parental factors including more insensitive and hostile parenting (Whalen & Henker, 1999) and that parents own attachment disorganisation may be linked to child disorder.

6.3. Parental attachment and ADHD

Adult attachment relates to aspects of parenting such as sensitivity, responsiveness, hostility and rejection (Bifulco & Thomas, 2013) and is associated with the parents' own attachment history. One study explored the predictive power of DA for ADHD symptoms by recruiting 53 mothers whose previous pregnancy had ended in stillbirth

and were identified as having a DA. Outcome measures were: maternal unresolved mourning (AAI; George, Kaplan & Main, 1984) during the third trimester; child attachment (SSP; Ainsworth et al., 1978) when the infant was 1 year old; questionnaire (ADHD RS; Du Paul et al., 1998) and observed rated hyperactivity and inattention at 7 years. Children were assigned probable caseness if they scored 20 or more on the ADHD-RS, and this group was entirely male (n=8, 7.8% of total sample). Disorganised scores were correlated with teachers ADHD scores but DA did not predict ADHD caseness, however, unresolved maternal mourning was the best predictor of child ADHD caseness. Unresolved mourning may involve “brief episodes of dissociation following a traumatic loss” (Pinto et al., 2006). The researchers suggest that transient episodes when caring for an infant may be frightening and contribute to DA, which they presume to be synonymous with ADHD. However this study was limited by a small sample of mothers who had experienced a traumatic loss and children with subclinical levels of ADHD symptoms, limiting its ecological validity and generalisability.

Quiroga & Ibanez (2007) explored mother and child attachment in an ADHD group (aged 6-7 years) compared to school controls. Outcome measures were child attachment, ADHD symptoms and maternal attachment, assessed by interview. They found a higher, but not significant, incidence of insecure attachment among ADHD children, and a significantly higher incidence of ambivalent and disorganised attachment in the ADHD group compared to controls. There was no control maternal data but mothers of ADHD children had a significantly higher percentage of insecure attachment than is reported in the normal population and was characterised by a predominantly anxious style. Children in the ADHD group scored higher on scales of symbolic competence, perceived parental support, positive resolution and expression of affection than their insecure counterparts. Insecurely attached children in the ADHD group demonstrated more chaotic narratives, difficulty structuring solutions to emotional conflicts and more negative perceptions of their parents. The association between ADHD

and disorganisation supports previous findings as well as being consistent with an affect dysregulation model of ADHD where symptoms demonstrate a lack of coherent behavioural strategy for managing emotional arousal under stressful conditions. This report would benefit from a suitable maternal control group and a larger sample size in order to test the possible significance of some of these associations.

Guttman-Steinmetz et al. (2011) explored concordance of attachment security among 79 mother child dyads (50 with ADHD diagnosis, 29 community sample) using a representational measure of attachment (Attachment Script Representation Task; Waters & Rodriguez, 2001), which captures narrative coherence and the extent to which a story tells a secure base script (seeking help from attachment figures results in comfort and assistance leading to a difficulty being resolved). Seventy-two percent were male and 58% were receiving medication. There was a significant association between secure attachment scripts for mothers and children in the community sample ($r=.053$, $p=.01$) but no association in the ADHD group, however higher scores on ADHD symptoms were significantly associated with lower child security ($p<.05$). Inconsistency in the findings with regards to parental transmission of attachment in ADHD samples warrants further research using standardised measures of adult attachment to explore these associations.

7.0. Attachment and Hyperactivity

7.1. Early parent-child interactions

Hyperactivity and early parent-child interactions was linked by two prospective studies, which demonstrated that parent-child interactions in infancy were associated with subsequent hyperactivity. Maternal intrusiveness predicted poor attention and distractibility at 3–4 years, and hyperactivity at 5–6 years, which were not associated with infant biological or temperament factors (Carlson, Jacobvitz, & Sroufe, 1995;

Jacobvitz & Sroufe, 1987). Maternal variables longitudinally tested in these studies were based on an affect regulation hypothesis of ADHD, postulating that hyperactivity is a problem with regulating arousal levels (Douglas & Peters, 1979), dependent on the caregiver's ability to respond appropriately to infant cues, provide stimulation or reduce it according to the infant's state of arousal (Brazelton, Koslowski & Main, 1974; Sander, 1975; Stern, 1977).

The earlier study (Jacobvitz & Sroufe, 1987) measured variables of "intrusiveness", characterised by physical interference with the infant's activity, non-contingent on the baby's mood or interest, at 6 months and "overstimulation" at 42 months, such as stimulating contact in the absence of the infant's signalled need, and provoking in situations that required calm reassurance. These behaviours were observed in laboratory scenarios and are subject to the effects of an unnatural setting, however inter-rater reliability was good for maternal variables ($r=.87$) and child temperament (69%). Children did not have a formal diagnosis of ADHD however four were prescribed stimulant medication by the end of the study. Maternal variables derived from arousal modulation were strongly discriminating, supporting an affect dysregulation theory of child hyperactivity.

The second study using a subsample from lower socioeconomic backgrounds ($n=191$), in their third trimester of pregnancy (Carlson, Jacobvitz & Sroufe, 1995) explored multiple antecedent variables including maternal anxiety, personality, intrusiveness, sensitivity and care-giving as well as contextual factors such as relationship status and emotional support. Outcome variables were child distractibility at 3 ½ years and hyperactivity at 6-8 years and 11 years. Maternal factors alone predicted quality of care-giving and not infant characteristics. Maternal care-giving quality independently predicted distractibility at 3 ½ years ($F=3.09$, $p<.05$). Hyperactivity at 6-8 years was predicted by maternal ($F=5.67$, $p<.01$) and contextual ($F=10.63$, $p<.001$) factors and

these contributed to the maintenance of hyperactivity at 11 years. The researchers concluded that despite multiple routes to the development of hyperactivity, intrusive and over-stimulating care plays a prominent role, particularly if the parent is isolated or lacking emotional support. Therefore, preventative interventions, with an emphasis on early parenting support for mothers at higher levels of risk, may be important. In this study, early parent-child interactions characterized by non-contingency and inappropriate levels of stimulation were associated with impaired self-regulation (distractibility and hyperactivity), in line with an affect dysregulation model of ADHD symptoms.

7.2. Transactions in later development

One study explored attachment and parental interactions between ADHD subtypes (Hyperactive-impulsive, Inattentive or Combined) (DSM-IV; APA, 2000) (Finzi-Dottan, Manor & Tyano, 2006). Sixty-five children, aged 7-15 years (77% male) were given a continuous score on dimensions of anxiety and avoidance according to the Child Attachment Style Questionnaire (CASCQ; Hazan & Shaver, 1987). Further measures of parental style (PQ; Cohen & Dibble, 1974) and child temperament (Temperament Survey for Children; Mathiesen & Tambs, 1999) were analysed. Hyperactive or Combined subtypes were significantly more insecure (anxious and avoidant) than inattentive children. Anxious attachment was predicted by a combination of parental promotion of autonomy and child temperament characterized by easy and intense emotional arousal. Avoidant attachment was predicted by parental restrictions on autonomy and children scoring highly on the activity dimension of temperament. However, this study did not report on DA and lacked a suitable control group. A possible dynamic between difficult child temperament and “poor-fit” parenting contributing to insecure attachment was suggested, which would support a reversed causal association, with ADHD temperament (high emotional arousal and activity)

important in predicting attachment. Therefore, the development of ADHD may be dependent on the goodness-of-fit of parenting to children with a predisposition for poor self-control.

8.0. Attachment and Inattention

There is limited research exploring attachment and attention, possibly due to attention being less salient to parents than externalising problems and appearing less frequently in parent reports (Fearon & Belsky 2004). Two longitudinal studies, using data from a large-scale American study by the National Institute of Child Health and Human Development (NICHD, 1999), examined maternal sensitivity, child inattention and externalising problems, and child attachment and inattention respectively (Belsky, Fearon & Bell, 2007; Fearon & Belsky, 2004). In the more recent study, lower maternal sensitivity at 54 months predicted poorer attentional control and more externalising problems at all follow up intervals. Attentional control also mediated the effects of insensitive parenting at 54 months on later externalising problems. In this study antecedent variables (sensitivity) predicted changes in sequelae (attention, aggression) conveying a strong basis for inferring causation. Limitations are unmeasured variables, which can also be responsible for change over time, such as genetic influence and contextual factors, and the largely low-risk sample, which may not be generalisable to more high-risk clinical groups.

The earlier study (Fearon & Belsky, 2004) explored the relationship between attachment and attention (n=918) using the SSP at 15 months, a Continuous Performance Test (CPT) and maternal questionnaires at 54 months, and measures of social-contextual adversity from birth. Avoidant and disorganised children generally demonstrated poorer attentional performance, particularly disorganised children at higher levels of cumulative risk. Importantly, attentional difficulties were not reported

by mothers of disorganised children, supporting the proposition that inattention is not as salient to parents as externalising or hyperactive behaviours.

A prospective study of 93 school-aged boys (Keown, 2011) divided into hyperactive and non-hyperactive groups according to the SDQ (Goodman, 2001) and parental report, using both regression and between group comparisons, demonstrated specific effects of responsive maternal and paternal interactions on ADHD symptoms. Greater paternal sensitivity was associated with less inattentiveness and less hyperactivity over time. Maternal positive regard predicted less inattention in middle childhood and maternal intrusiveness was positively related to teacher ratings of child inattention, supporting previous research (Carlson, Jacobvitz & Sroufe, 1995). This study adapted statistical analysis to allow for better predictive validity of antecedent variables, with parent variables measured prior to child outcomes and child problems at age 4 controlled. The researchers concluded that for some children who develop ADHD, poor self-regulation may be linked to parental difficulties in sensitively attuning to child cues.

9.0. Summary

There is evidence for an association between ADHD and insecure-anxious or disorganised attachment, with higher prevalence of insecurity among children with ADHD compared to normal developing controls. However, it remains unclear whether they are synonymous or co-occurring disorders. If co-occurring, there are necessary mediating contextual and environmental factors which would bring out the expression of the secondary disorder, as not all insecurely attached children have ADHD, or vice versa. Longitudinal studies imply that parental sensitivity and responsiveness, which precede child disorder, contribute to the development of ADHD symptoms even when child characteristics are controlled. However longitudinal studies are limited, as samples selected from infancy do not always show clinically meaningful ADHD symptoms later in development. Parental factors may be independently related to social adversity, lack of

emotional support and parental insecure attachment as indicated in some research. Therefore inferences should be made with caution as the aetiology of ADHD remains multi-factorial and complex.

10.0. Methodological Limitations

Few assessments of attachment in middle childhood have been accepted in research (Green & Goldwyn, 2002), as children have outgrown the SSP (Ainsworth et al., 1978) and are too young for more complex narrative assessments. Story stem, doll play and drawing measures are adapted for this age group but are subject to poor inter-rater reliability (Sagi, van Ijzendoorn, Aviezer & Donnell, 1994) and lack of construct stability, with attachment at this age still dependent on the stability of the parenting behaviour. ADHD may also impact on focus and coherence in story stem completions and tasks requiring prolonged attention or narrative coherence. Inconsistent use of ADHD symptom measures, with varying diagnostic power and reliability, makes it difficult to synthesise findings.

Not all studies reported on child medication, which would affect correlational analyses looking at ADHD symptom severity. Child symptoms are reported by either parents or teachers which, although typical in clinical diagnosis, is problematic as evidence suggests that agreement between different reporters of child symptomatology is only modest (Briggs-Gowan, Carter & Schwab-Stone, 1996) and mothers with high levels of anxiety and depression may report a number of child behavioural symptoms, which are not reported by children or their teachers (Najman et al., 2001). However, not all studies included here reported on parent mental health.

11.0. Discussion

This review described a large body of international research that has sought to identify contributing factors to both symptomatic and clinical ADHD in children. While the data across cross-sectional and longitudinal studies make it quite clear that DA is a marker of risk in the development of ADHD, these findings, as well as those related to an affect dysregulation model remain inconclusive about DA or affect dysregulation as predictive of ADHD caseness. A discussion now follows with reference to the initial question: “What features of the attachment relationship and early parent-child interactions are associated with ADHD symptoms in school-age children? ”

11.1. Insecure and Disorganised Attachment

There is evidence to support an association between child insecure attachment and ADHD, with high prevalence among ADHD samples. Insecure attachment was characterised by strong out of control affects, difficulty discriminating between environmental stimuli, lack of narrative coherence and negative perceptions of parent relationships. DA was typically found in either comorbid samples (Clarke et al., 2002; Green, Stanley & Peters, 2007) linked to atypical parenting; or in samples with sub-clinical symptoms (Bohlin et al., 2012; Pinto et al., 2006). These findings are difficult to interpret, as they are potentially contradictory. We would expect children with more severe presentations to be disorganised as DA is related to care-giving that is inconsistent and frightening and is most strongly linked to psychopathology (Green & Goldwyn, 2002; van Ijzendoorn, Schuengel & Bakermans-Kranenburg, 1999) and yet in sub-clinical populations DA did not predict ADHD caseness but was associated with less severe symptoms (Pinto et al., 2006). These are only the findings of a small number of studies and further research is needed to explore this association with more typical ADHD referrals.

Attachment theory suggests that maladaptive views of self and other, resulting from insecure attachments, put children at risk of aggression (Bowlby, 1969; 1982; 1973). The research suggests that anger and aggression are important markers of the disorder and may be associated with more atypical parenting and child DA, however none of these studies reviewed here were able to link DA to actual deprivation or abuse.

11.2. An Affect dysregulation model

Early parent interactions seem to be important in predicting ADHD symptoms in later development (Carlson, Jacobvitz & Sroufe, 1995) and generally point to dual pathways of insensitive as well as non-responsive care-giving for hyperactivity, and both intrusive and neglectful interactions for inattention. Intrusive and neglectful parenting might both serve to threaten the development of normal attention through lack of scaffolding of infant engagement with the environment (Trevathan & Aitken, 2001). Inattention may serve different functions with children who are neglected, failing to sustain attention due to lack of early joint attention and scaffolding, whereas children subject to intrusiveness may resort to inattention as a defensive strategy. Although longitudinal studies are well placed to make assumptions about causality they are often among subclinical populations. Therefore, further research may be needed to explore whether early contributing factors identified here are also significant in clinical samples.

Hyperactivity may be an adaptive form of demanding interaction to attain proximity and attention from non-responsive caregivers (Mikulincer & Shaver, 2003), as well as a primary difficulty with affect regulation, due to lack of early sensitive parenting. These cycles may be maintained and amplified as parents habituate to these behaviours, becoming less responsive to higher levels of arousal. However, intrusive or withdrawn parenting may also be a response to more hyperactive and hard to soothe children.

Therefore variability in parenting responses may be due to parent factors that are not addressed in this literature and might be investigated further.

12.0. Implications for Research and Practice

This review provides some support for an alternative explanation to the biomedical model of ADHD, with implications for location of the disorder in family interactions and not in individual children, which could have an important impact on the stigmatising power of the disorder on children's self confidence and identity. Implications are that interventions focusing on the parent-child attachment relationship may be important and if early parent-child interactions can predict later hyperactivity and inattention, then early interventions may also be key.

Insecure attachments are associated with problems in social functioning based on negative expectations about relationships (Cassidy, Kirsch, Scolton & Parke, 1996; Slough & Greenberg, 1990). Children with ADHD are less likely to express confidence and feelings of well-being in the context of separation (Clarke & Stiefel, 2002). Further research might focus on the identity of children with ADHD and explore how confidence in relationships might be facilitated through appropriate interventions.

Research highlighting developmental risks is disproportionately of sub-clinical samples and thus has inherent problems of generalisability. Further research might explore associations in more balanced clinical and non-clinical populations with a focus on prospective studies, which can identify predictors of later disorder.

Some studies indicated the importance of maternal factors: attachment disorientation, EE and lack of sensitivity and responsiveness (Carlson, Jacobvitz & Sroufe, 1995; Crittenden & Kulbotten, 2007; Green, Stanley & Peters, 2007). However, there is a paucity of research that measures parental attachment in studies of child ADHD.

Familial contributors to the development of ADHD should be further explored both in terms of maternal disorientation but also other anomalous attachment strategies.

12.1. Questions for future research

- Adult attachment: What parental attachment, evident in parenting and parent-child interactions, might contribute to the development of ADHD symptoms?
- Comorbidity and ADHD: What are the familial factors associated with the comorbidity of conduct problems in ADHD?
- Qualitative: What are the experiences of parents living with children with a diagnosis of ADHD?

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Section B: Empirical Paper

Parent Attachment Styles and their relationship to the severity of parent-reported child ADHD symptoms

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The present paper is intended for submission to 'Clinical Child Psychology and Psychiatry'. Where possible, guidelines for publication have been followed.

Abstract

The present study investigated the relationship between parent attachment style (AS) and child Attention Deficit Hyperactivity Disorder (ADHD) symptoms in a between-subjects, correlational design. Parents of 13 clinical referrals with a diagnosis of ADHD (aged 6-14 years) were compared with parents of 43 healthy children from a primary school sample on measures of parent AS (Vulnerable Attachment Style Questionnaire; VASQ), parental mood (General Health Questionnaire; GHQ) and parent ratings of child ADHD symptoms (The Conners 3rd Edition–Parent Short form [CP-S]). There were no differences in parent AS between groups. Across both groups parent dual/disorganised attachment was significantly associated with higher parent-reported child aggression, and was associated with child hyperactivity, but just short of statistical significance ($p < 0.056$). There was also an association between parental avoidant AS and child hyperactivity, which fell just short of statistical significance. The study concluded that parental insecure attachment, specifically either dual/disorganised or avoidant style, contributes to increased risk of child aggression and hyperactivity. Clinical implications were drawn and recommendations made for future research.

Keywords

ADHD, parent attachment style, disorganised attachment, aggression

Introduction

ADHD is a childhood disorder characterised by developmentally inappropriate levels of hyperactivity, impulsivity and inattention, as well as conduct problems and difficult peer relationships. The aetiology of ADHD remains poorly understood, with multiple pathway models postulated, suggesting negative interactions between different risk factors, including child temperament, familial stress and parenting practices (Johnston & Mash, 2001). Some research has explored these associations in terms of the parent-child attachment relationship, recognised as important in the development of self-regulatory skills, and providing a framework for understanding child behaviour as adaptive in the parenting environment.

Attachment is a physiological, emotional and cognitive system, which develops between infant and caregiver in the first years of life (Mikulincer, Shaver & Pereg, 2003). Secure attachment is normative, and associated with the ability to manage and regulate emotions under conditions of stress with support initially from parents or caregivers, ensuring the development of associated physiological and cognitive mechanisms. Early difficulties in the attachment system can result in insecure attachment, related to problems in functioning and to clinical disorder (Green & Goldwyn, 2002; Sroufe, Carlson, Levy & Egeland, 1999).

One contributing factor to child security is parent attachment style. Attachment style (AS) is a relating style, evident in the behaviours and feelings associated with romantic relationships as well as parenting, and is proposed to emanate from early childhood attachments. Parent AS provides the emotional climate in which infants develop their capacity for emotion regulation and through which parents transmit methods of coping and managing emotion (Bifulco & Thomas, 2013). Therefore children's development of these capacities are dependent on their parents' own functioning in these areas. This

study will examine the potential contribution of AS to children's ADHD symptoms in a clinical and non-clinical group, allowing conclusions to be drawn more generally for this association but also with implications for clinical diagnosis and disorder.

Attention Deficit Hyperactivity Disorder (ADHD)

ADHD is diagnosed according to observations of maladaptive, developmentally inappropriate symptoms of: 'impulsivity' signifying actions without foresight; 'hyperactivity' a restless and shifting excess of movement; and 'inattention' a difficulty with sustained effort and focus (NICE, 2009; 2013). According to the latest DSM-V criteria (APA, 2013), in order to receive a diagnosis of ADHD a child should have several inattentive or hyperactive-impulsive symptoms which; are present before age 12 years; are present in two or more settings, (e.g., at home, school); clearly interfere with, or reduce the quality of, social or school functioning; are not better explained by another mental disorder. Diagnosis involves investigation of the severity of core symptoms, their origin and developmental course, how they compare with normally developing children and the presence of comorbidities. Some children may show symptoms but will not have a diagnosis due to the presence of other confounding contextual or familial factors, which better explain their presence. Therefore symptomatic ADHD may represent a different population from clinical ADHD based on the lack of confounding factors. However attachment relationships are not routinely assessed in ADHD diagnosis. Although NICE guidelines (2008) suggest that a full developmental history be conducted, it does not specify any formal assessment of attachment, and therefore this remains a possible aetiological factor in both populations.

In research, ADHD symptoms are measured according to two types of standardised rating scale; broad instruments that evaluate general functioning such as the Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001), and the Achenbach scales (Achenbach et al., 2003; Achenbach & Rescorla, 2001), and specific ADHD symptom scales which include

the Conners' scales for young people (Conners et al., 1997). The limitations of rating scales include an only moderate inter-rater reliability (Verhulst & van der Ende, 2002) as well as less sensitivity and specificity compared with a full diagnostic assessment carried out by a multi-disciplinary team approach (NICE, 2009).

Attachment

The normal development of attachment confers security, which creates a number of benefits for the child as it grows, and is enhanced through parenting behaviours, related to AS in the primary caregiver. Securely attached individuals become increasingly capable of self-regulation, hypothesized to draw on cognitive-affective processes called Internal Working Models (IWMs) (Bowlby, 1973; Bretherton & Munholland, 2008).

When care-giving is inconsistently responsive, unavailable or abusive, the attachment system adapts to employ strategies that best promote safety. The infant may resort to secondary strategies, characterized by “hyperactivating” or “deactivating” modes of stress regulation (Mikulincer & Shaver, 2007; Roisman, 2007). Hyperactivating strategies are characterized by increased attempts to elicit proximity, seeking attention in negative ways such as crying and clinging, arising in the context of inconsistent care-giving (Wolke, Rizzo & Woods, 2002). When effective, these strategies are likely to be reinforced and are associated with an Anxious or Preoccupied attachment style in childhood and adulthood (Fraley et al., 2006). Deactivating strategies involve attempts to suppress the attachment system and deny attachment needs, leading to self-soothing behaviour and withdrawal in childhood (Cassidy & Kobak, 1988), and are associated with an Avoidant or Dismissing attachment style (Bartholomew, 1990; Shaver & Hazan, 1993).

Individuals who experience highly unpredictable and abusive care-giving environments, and demonstrate an observable lack of attachment strategy, are classified as

Disorganised (Main & Hesse, 1990; Main & Solomon, 1986). Therefore child attachment strategies are contingent on parent's attachment styles. For example, a parent with an Avoidant AS might be highly self-reliant and avoid intimacy in close relationships. This style might also be characterised by a tendency to be denigrating and dismissive of close others (Bifulco & Thomas, 2013). A child seeking comfort from this parent may find them unavailable or even hostile and may therefore resort to hyperactivating strategies to elicit responses from them when distressed.

Adult Attachment Style (AS)

There are two approaches to measuring AS; psychodynamic and social psychological. Psychodynamic measures such as the Adult Attachment Interview (AAI) (George, Kaplan & Main, 1985), which explores ability to report coherently on childhood experience as a marker of attachment representation¹, are typically used to predict infant attachment in the next generation (Bernier & Dozier, 2002). Research has demonstrated predictive associations (approx. 75%) of maternal representations of attachment, as measured by the AAI, to infant attachment (Fonagy, Steele, & Steele, 1991; van Ijzendoorn, 1995). See Figure 1 for a proposed model of intergenerational transmission of attachment, adapted from van Ijzendoorn & Bakermans-Kranenburg (1997).

¹ "Attachment representation" refers to an adult's state of mind with regards to attachment relationships and the cognitive strategies they have developed since childhood to organize and understand present and past attachment experiences. The coding of AAI transcripts is not based on childhood attachment experiences per se but on the way in which the participants describe and reflect on these experiences and the effects on their current functioning as adults and as parents (Main & Goldwyn, 1991).

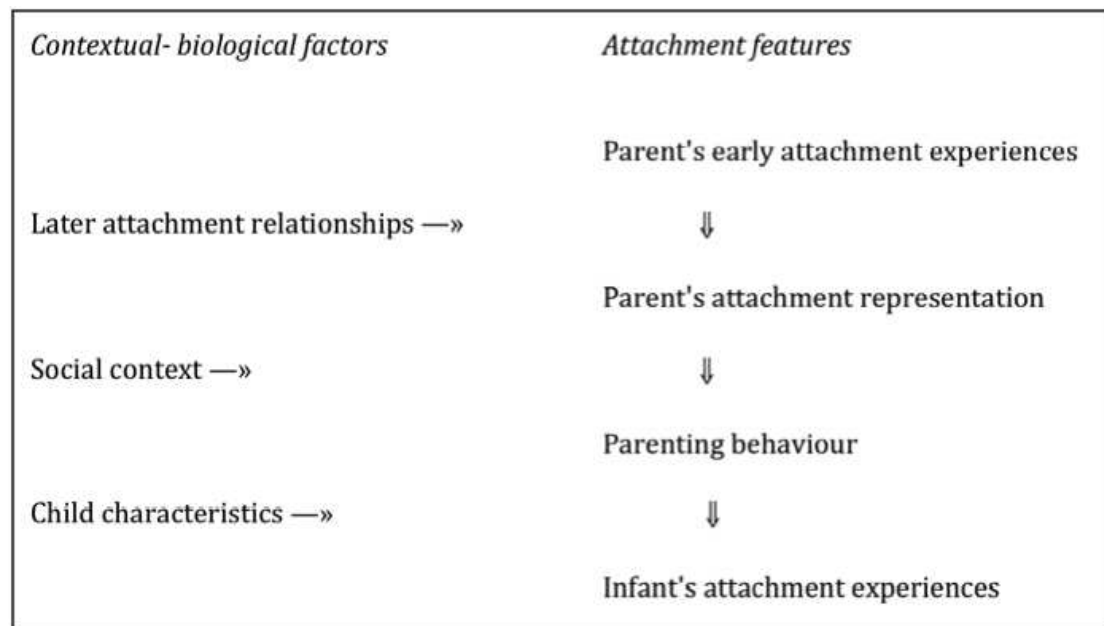


Figure 1. Model of intergenerational transmission of attachment (van Ijzendoorn & Bakermans-Kranenburg, 1997)

Social measures such as the Attachment Style Interview (ASI; Bifulco et al., 2002), which examines behavior in relationships as a marker and expression of ongoing attachment style, elicit styles that map onto almost all of the same attachment categories by instead focusing on current interpersonal style and behaviours (for further details of the ASI see Appendix E). These are largely based around four categories: Secure (comfortable with closeness, moderate levels of autonomy); Anxious–Ambivalent (low self reliance, fear of separation, high need for company); Fearful (fear of rejection); and Avoidant (high self reliance)(Hazan & Shaver, 1994). A fifth vignette of ‘distrust’ equating to Angry-avoidance was added by Holmes and Lyons Ruth (2006). Disorganised style is inconsistently utilized, but in some measures relates to a dual style, in others to unresolved loss (for a review of adult attachment measures see Crowell & Treboux, 1995). For the purposes of research, social measures have been adapted into shorter self-report questionnaires, such as the Vulnerable Attachment Style Questionnaire (VASQ) (Bifulco, Mahon et al., 2003), which is used in this report and described below.

Adult attachment insecurity is commonly conceptualized in terms of either Anxiety (related to fear of abandonment) or Avoidance (involving fear or mistrust of others) (Brennan, Clark & Shaver, 1998). Research has demonstrated how insecure AS relates to childhood neglect and abuse (Crittenden, 1997), poor support (Bartholomew & Horowitz, 1991; Hazan & Shaver, 1994), stress (Mikulincer & Florian, 1998) and psychological disorder in adulthood (Mickelson & Kessler, 1997), factors which are also identified as involved in depressive related vulnerability (Bifulco, Moran et al., 2002). Insecure adult AS is also highly associated with poorer parenting (Steele, Steele & Fonagy, 1996), less maternal responsiveness (Wahler & Meginnis, 1997), less sensitivity in interactions (Fonagy, Steele & Steele, 1991) and difficulties in partner relationships (Kobak & Hazan, 1991). Secure parents have optimal preconditions for sensitivity due to their own favourable early experiences. For insecure parents (anxious or avoidant) these preconditions are impaired. In parents with the more complex disorganised style, whose experiences are likely to have been characterised by more extreme neglect or abuse, a high level of severely impaired sensitivity is implied. Adult insecure-anxious attachment is associated with more intrusive interactions in parenting whereas avoidance is associated with distant and non-responsive interactions, both indicating insensitivity (McMahon, Barnett et al., 2006; Murray, Stanley et al., 1996; Rholes & Simpson, 2004). AS is therefore an important factor in parenting the next generation and enhancing risk or resilience in offspring.

Affect regulation, AS and ADHD symptoms

Parental attachment security is transmitted to the child through responsiveness and sensitivity, which are prerequisites of the development of self-regulation skills (De Wolff & van Ijzendoorn, 1997; Kochanska et al., 1997). Poor self-regulation is associated with difficulty in managing levels of arousal and problems discriminating between important and unimportant environmental cues in children with hyperactivity and inattention (Crittenden

& Kulbotten, 2007). In a European study, the AS of pregnant women was measured antenatally as a predictor of both postnatal depression and interaction with her infant at 6 months (Bifulco, Figueiredo et al., 2004). Mothers' AS were significantly correlated with interaction with her infant (Bifulco & Thomas 2012). Anxious (enmeshed/fearful) mothers showed an absence of global sensitivity ($p < 0.01$) and were more demanding in interactions, whereas Avoidant (angry/withdrawn) mothers were remote ($p < 0.01$) silent ($p < 0.02$) and non-energetic ($p < 0.03$). However, none of the independent infant behaviours were correlated with the mother's antenatal attachment style.

Feelings of anxiety, anger or distress accompanying parent insecure AS may be misdirected towards the child, or compromise parental availability or sensitivity, leading to less optimal early parent-child interactions and lack of child security. Carlson, Jacobvitz & Sroufe, (1995) found that maternal sensitivity and overstimulating or non-responsive interactions predicted distractibility and hyperactivity in their offspring. This association was supported by findings from Campbell and colleagues (Campbell, Breaux, Ewing, Szumowski, 1986; Campbell & Ewing, 1990) that maternal interactions characterised by negative control, lack of enjoyment and mother-child conflict at 3 years related to both ADHD and ODD at 6 and 9 years. Maternal attachment insecurity was also significantly correlated with child emotional and behavioural problems including increased hyperactivity, and this association was stronger when combined with paternal depression (Karabekiroglu & Rodopman-Arman 2011). These studies point to important parent attachment behaviours that are longitudinally related to ADHD symptoms. However they do not use validated measures of adult attachment and not all studies included children with a formal diagnosis of ADHD. Research indicating that parenting may mediate between environmental risk factors (maternal depression, social adversity) in infancy and childhood (Murray, Sinclair, Cooper, Ducournau & Turner, 1999; Webster-Stratton, 1990) suggests that parental attachment may be a resilience factor as well as a risk factor in developing ADHD symptoms.

Parent attachment and child ADHD

Parents of children with ADHD tend to have higher levels of stress, demonstrate more negative parenting strategies and are more socially isolated and depressed than parents of normally developing children (Hechtman, 1996; Johnston & Mash, 2001). Some case-based research has identified similar disorganised attachment patterns in both mothers and their children with ADHD (Crittenden & Kulbotten, 2007; Dallos & Smart, 2011) and suggest that increased difficulties may in part be explained by their own insecure attachment. In one case study maternal disorganised attachment, evident in attachment representations linked to her own childhood (Crittenden & Kulbotten, 2007), was contributing to a dyadic system of anxiety between her and her child with ADHD. The combination of anxious and avoidant elements in the primary attachment figure may be very difficult for the child to resolve, resulting in hypervigilance and “continuous vigilant monitoring” as a self-protective strategy (Dallos & Smart, 2011).

In a multiple case-study design with ADHD families, Stiefel (1997) found shared histories of increased life stressors, parental vulnerabilities (e.g. negative self image) and psychological stressors (insufficient support), with parental vulnerabilities linked to parents’ own attachment histories. Family stressors absorbed parental attention and led to increased attempts by their children to elicit attention in negative ways. These findings emphasise the importance of joint dysfunctional patterns of emotion regulation and attachment strategies within ADHD families. Few studies directly explore the link between adult attachment and child ADHD symptoms. Kissgen et al. (2009) found that maternal insecurity (dismissing/preoccupied) was correlated with the severity of child symptoms in an ADHD sample, suggesting that the greater the parents own attachment disturbances, the more severe the behavioural presentation of their children. Although these studies do not

elucidate causal mechanisms, they imply an important link between maternal insecurity and child disorder in ADHD samples.

Given the importance of parent-child interactions in contributing to the development of emotion regulation, complex problems such as ADHD may arise from inconsistent attachment responses, mirrored by confusion and disorientation in the child. Some studies propose that ADHD is synonymous with attachment disorganisation (Clarke et al., 2002), however Guttman-Steinmetz et al. (2011) found no association between mothers and children's attachment security in an ADHD sample using a narrative approach. However they did find that maternal reports of children's ADHD symptoms were negatively associated with child security. Therefore research remains inconclusive as to the contribution of adult insecure attachment to the development of child ADHD symptoms.

Attachment and aggression

Anderson, Hinshaw, and Simmel (1994) in a controlled study of 49 boys with an ADHD diagnosis found that maternal negativity (discouragement, non-acceptance and disappointment) predicted aggressive externalising behaviour over a 1-2-month period, with maternal psychopathology and child negative behaviour controlled. In another study, very high maternal EE (critical comments, hostility, rejection, and emotional over-involvement) was associated with child disorganisation and low maternal EE was associated with fewer ADHD symptoms in a sample of children with conduct disorder (CD) and ADHD (Green, Stanley & Peters, 2007).

Children with ADHD are more likely to use coping strategies involving hatred, hostility, retribution and anger (Clarke et al., 2002) and aggressive children are often suspected of having ADHD by others (Singh, 2011). Coercive parent-child interactions are better accounted for by comorbid ODD symptoms than ADHD alone (Barkley, Fischer, Edelbrock &

Smallish, 1990) suggesting that increased aggression in children with ADHD is associated with greater disturbance in the parent-child relationship. Therefore we would expect to find an increased attachment disruption in children with more aggressive symptoms.

Rationale for the study

There is an urgent need for better understanding of the development of child aggression and hyperactivity due to the severity of adverse outcomes (Farrington, Loeber & van Kammen, 1990; Hechtman & Weiss, 1983; Mannuzza, Klein, Bessler, Malloy & LaPadula, 1993) and the increasing prevalence of diagnoses. Despite suggestions that parent insecure attachment may be implicated in ADHD, there is a paucity of research that directly explores this association and studies tend not to address causality but adopt a transactional approach with child and parent behaviour reciprocally related (Johnston et al., 2002). This study will attempt to over-ride this difficulty by looking at parental AS, which precedes offspring. Furthermore, research has tended to focus on mothers despite evidence that paternal factors are also important (Karabekiroglu & Rodopman-Arman, 2011). Longitudinal studies suggest casual links between parent attachment behaviour and child hyperactivity and aggression, however these are usually of normative samples. Therefore this study will examine AS as a possible explanatory model in relation to ADHD and aggression in primary school-aged offspring using a clinical and non-clinical group.

Hypotheses

Based on the findings from the field of research reviewed above, the following hypotheses were generated:

- ❖ **Parent attachment and child ADHD diagnosis:** Parents of children with ADHD will have higher levels of self-reported attachment insecurity (AS) than parents of children without a diagnosis.

- ❖ **Parent attachment and severity of ADHD symptoms:** Increased parent AS insecurity will be associated with increased parent reported child ADHD symptoms of hyperactivity and inattention.
- ❖ **Adult attachment and child symptoms:** Dual/Disorganised parent AS will be associated with increased child hyperactivity and aggression.

Method

Participants and Recruitment

Participants were parents of a child with an ADHD diagnosis aged between 6 and 15 years, and parents of healthy controls recruited from a local primary school. Potential participants for the ADHD group were recruited through Service X, a specialist ADHD assessment and follow up service located within a generic Child and Young People's directorate (CYP) in South London. The service provides specialist assessment and ADHD diagnostic services for children and young people aged 0-17 years, and the team consists of psychiatry, clinical psychology, community paediatrics (specialist child health doctors) and family therapy. Families are mainly referred to the service by GPs, although some referrals also come from schools, Social Services and Generic CAMHS. Community control participants were recruited from Years 4 to 6 of a primary school, which was located in the same South London borough.

Participants were included if they were the parent of a child aged 6-15 years old. According to the Mental Capacity Act (Department of Health, 2005), participants were assumed to have capacity unless there were indications to the contrary such as, being unable to understand or communicate their decision to participate (Department of Health, 2005). It was also necessary for participants to be fluent in English. Participants were excluded if their child had a diagnosis of a learning disability or acquired brain injury, had been looked after in care, were adopted or had a diagnosis of Autism Spectrum Disorder (ASD). Parents were excluded if they had a significant history of severe mental illness (e.g. schizophrenia), or were currently receiving treatment for a mental health condition.

Information sheets were distributed to 195 potential participants (ADHD: 23; non ADHD: 172), of which 78 consented to take part. Of those who consented, data were

initially acquired for a total of 65 participants (ADHD: 16; non-ADHD: 49). Due to incomplete questionnaires and missing data, a remaining sample of 56 participants (13 ADHD; 43 non-ADHD) was included in the final data analyses (Appendix F). The study group consisted of 56 parents of children aged between 6 and 14 years, (mean age 9.7 years, SD 1.86) (boys $n=43$; girls $n=13$). Parents were predominantly White British (69.6%) and in part or full time employment (71.4%). Parents in the ADHD group were less likely to be married or living with a partner (61.5%) than the non-ADHD group (79.1%) and had larger families, with 46.2% of the ADHD group living with 3 or more children compared to 13.9% of the non-ADHD group. Most parents were mothers (87.5%) with one father in the ADHD group and 6 in the non-ADHD group. Data from both parents were obtained for one girl in the non-ADHD group and these data were included in the analysis as two separate entries.

Measures

General Health Questionnaire-12 item (GHQ-12) (Goldberg & Williams, 1988).

The GHQ-12 is a self-report measure of mental health and psychological well-being, commonly used by General Practitioners (Appendix G) to assess psychological distress. Each item is rated on a 4-point Likert scale from “Not at all” =1, to “Much more than usual” = 4. This produces a score from 0–48 which can be broken down into five categories: 1–22 indicates low psychological distress; 23–24 is ‘typical’; 25–27 is ‘more than typical’; 28–32 shows ‘evidence of psychological distress’; scores over 32 indicate ‘severe distress’ (Goldberg et al., 1997). The scale has good content validity, and construct validity with internal consistency correlations ranging from 0.77 to 0.93 (Goldberg et al., 1997). The GHQ was used in this study to screen participants for high levels of depressive mood, which can interfere with attachment relationships as well as influence parental report of child symptoms. Participants with scores over 32 indicating

severe psychological distress were excluded from the study and protocol involved informing parents of their score and advising them to seek support from their GP. None of the participants' scores indicated severe distress and no one was excluded on this basis.

The Vulnerable Attachment Style Questionnaire (VASQ): (Bifulco et al., 2003).

The VASQ (Appendix H) is a 22-item categorical self-report measure, used to identify negative styles of attachment. Participants respond to items in the context of "the way people feel about themselves in relation to others", and indicate whether they agree or disagree with a given statement using a five-point Likert scale ranging from "Strongly Disagree" = 1 to "Strongly Agree" = 5. The centre point is 'unsure'. The sum of all items gives a total score, which if above the cut-off of 57, indicates a high level of vulnerable attachment style conferring insecurity. The VASQ has two subscales; Insecure – Avoidant (Mistrust), and Insecure-Anxious (proximity-seeking), which give the style of insecurity. A combined high score on both Avoidant and Anxious scales indicates a Dual/Disorganised style. The VASQ has been validated against an existing investigator-based interview (ASI; Bifulco et al., 2002) for 262 community-based subjects (Bifulco, Mahon et al., 2003). Inter-item reliability (0.82) and validity in relation to the ASI measure of insecurity ($r=0.27$, $p<0.001$) was good. Test-retest was determined on 38 subjects over a 6 month time period. Cronbach's alpha for the 12 avoidant-scale items was 0.82 and for the 10 anxious items was 0.67. The test-retest reliability was 0.73 (Pearsons r , $p<0.001$) for the avoidant scale and 0.65 ($p<0.0001$) for the anxiety scale. Correlation for the total score at retest was 0.65 ($p<0.0001$). Example statements for each subscale are shown in Table 1. Self-report measures are able to predict behaviour and interpersonal functioning styles hypothesized in attachment theory (Shaver & Mikulincer, 2005). Whilst there are a number of measures (see Stein et al., 1998 for

review) the VASQ is validated against the ASI (Bifulco et al., 2002), an interview used extensively with parents and in vulnerable samples.

Table 1. VASQ* example items

Subscale	Example items
Insecure Avoidant	<i>I take my time getting to know people</i> <i>People let me down a lot</i> <i>It's best not to get too emotionally close to other people</i> <i>I find it hard to trust others</i>
Insecure Anxious	<i>I miss the company of others when I am alone</i> <i>I worry a lot if people I live with arrive back later than expected</i> <i>I usually rely on advice from others when I've got a problem</i> <i>I'm clingy with others</i>

*VASQ: The Vulnerability Attachment Style Questionnaire (Bifulco, et al., 2003)

The Conners 3rd Edition, Parent Short form (Conners 3-P (S) (Conners, 2008).

The Conners 3-P(S) (Appendix I) is an assessment tool used to obtain parents' observations about their child's behavior with a focus on Attention Deficit/Hyperactivity Disorder (ADHD) and common co-morbid problems in children and adolescents aged 6 to 18 years old. The CP-S can provide information about how they compare to other youth, and which scales are elevated. There are 6 empirically derived scales; Hyperactivity/Impulsivity, Executive Function, Learning Problems, Aggression, Peer Relationships and Inattention. Parents select responses on a 4 point Likert scale from "Not true at all (Never, Seldom)" to "Very much true (Very often, Very

frequently)". In this study raw scores were used for correlational analyses, however in clinical assessment raw scores can be transformed to linear T-scores, meaning each scale maintains its natural distribution in the conversion to norm-referenced scores.

Procedure

Recruitment and Consent

ADHD Group. The Chief Investigator met with Multi-Disciplinary Teams in the CYP directorate to introduce the research and one team was identified as being well-placed to assist with the study. This team focused exclusively on assessment, follow up and treatment for children with a diagnosis of ADHD and clinicians had regular contact with families and parents. Feedback suggested that it would be preferable for clinicians, who had a working relationship with families, to introduce the research. Therefore parents were initially approached by their key-worker. Clinicians were asked to identify suitable candidates according to the inclusion and exclusion criteria and to distribute Information Sheets accordingly (Appendix J). Participants were approached through individual sessions as well as parent support groups. The issue of consent was discussed and parents were given at least 24 hours to consider the information sheet before agreeing to take part. Contact numbers were made available so parents could request more information. The GHQ-12 raised two potential issues; firstly, questions may be distressing to participants and secondly, may indicate "severe psychological distress". Information about the GHQ-12 was included in the information sheet, which also included instructions for contacting their GP, and this was highlighted by the key-worker.

Participants could complete the questionnaires in the clinic or online. An online version of the test battery was created which was accessed by web address or by email. The online data was only accessible to the Chief Investigator by encrypted password. Data

was downloaded directly from the website, link-anonymised and saved on a password locked computer. At the end of the study the online survey was removed and all online data destroyed. All hard copies were returned to the key-worker in a sealed envelope to ensure confidentiality, and were collected by the Chief Investigator and coded. Link-anonymised coding information was only available to the Chief Investigator and lead supervisor. All paper copies were kept in a locked file cabinet and electronic formats of the data were kept on a password locked computer. Participants were given permission to withdraw from the study at any time up until the entry of coded data into the analysis.

Non-ADHD Group. Three schools in the same geographic location as Service X were identified and initially contacted by letter containing a brief summary of the aims of the study and measures used. One school responded, and following a meeting with the Head Teacher, information sheets and a letter about the research were sent home to parents of all students in Years 4 to 6, initially targeting children aged between 8 and 11 years. Consent forms (Appendix K) and measures were given to self-identified participants. They were also sent a confirmation email containing a link to the online survey. As with the ADHD group, the email contained information about the potential risks of taking part, including sensitive questions about their mood as well as about their child's behaviour. Parents were informed that it was not the objective of the study to identify children with ADHD symptoms, but that if this were the case they would be informed and invited to seek further information from the School Special Educational Needs (SEN) coordinator or their GP.

Ethical Approval

The procedure and use of measures outlined above were granted full ethical approval by the Cambridge East National Health Service Ethics Committee (Reference 12/EE/0333)

(Appendix L). Approval was also given by the relevant NHS Research and Development /Research Governance Office at the participating sites (Appendix M). Written, informed consent was obtained from all participants following British Psychological Society (2010) research ethics guidelines.

Design

Between-groups analyses were conducted in order to make comparisons between ADHD participants and normal developing controls. Associations between variables were explored using correlational analyses and in order to increase statistical power, the data from both groups was combined.

Power calculation

An *a priori* power calculation to estimate the required sample size was conducted with reference to Clark-Carter (2007), who recommends a total sample of 20-25 participants in order to detect a strong correlation between variables. Using the G*Power software (Faul, Erdfelder, Buchner, & Lang, 2009), based on previously reported effect sizes (e.g. $r = .49$; Posada et al., 1999) a total sample of 62 participants was estimated to achieve 81% power. For all calculations the alpha level was set at 5% and power was set at 80% as recommended by Cohen (1988). The numbers used in the study fall short of those required which means the statistical analysis is underpowered and likely to lead to type 2 errors.

Statistical Analysis

Data were analysed using SPSS 20.0. Parametric assumptions were checked for all variables prior to analysis. Both between-groups and combined group analyses were undertaken. Independent-sample t-tests were used to explore between-group differences. Variable distributions were examined for normality, and nonparametric

statistics were used in cases where scores were not normally distributed. Correlations between the VASQ and Conners raw scores for Hyperactivity, Inattention, and Aggression were explored with Pearson's product moment coefficients (r) for parametric data or Kendall's tau coefficients (τ) for non-parametric data. Statistical differences between the groups were assessed by chi-square tests for categorical variables (e.g. Attachment Style and ADHD Group), and by t-tests for continuous variables. In case of significant difference in terms of severity of emotional and behavioural problems of children between the two groups, additional co-factors that predict higher emotional and behavioural problem scores were explored. Therefore multiple regression techniques were used to investigate the relationship between predictor variables (e.g. parent AS) and the dependent variable (e.g. child ADHD symptoms). All p values were based on two-tailed tests with $\alpha = 0.05$. All values are reported as either percentages or means \pm standard deviation.

Results

Participant Demographics

Fifty-six parents of children aged between 6 and 14 years (mean age of 9.7 years, SD 1.86), 43 male and 13 female, participated. Overall 49 mothers and 7 fathers (12.5%) took part; 42 parents in the non-ADHD group (76.8% of total sample) and 13 in the ADHD group. There were no differences between groups on demographic variables, but the ADHD group reported their children as significantly more impaired on all subscales than controls ($p < 0.001$). Participant demographics are summarised in Table 2. All children in the ADHD group were receiving therapeutic intervention provided by Service X, however individual treatment parameters were unknown. Medication status is not reported in this study.

Table 2. Demographic details of final sample

	<i>ADHD</i>	<i>Non-ADHD</i>	<i>Test statistic</i>	<i>Sig.</i>
Parents (n)	13	43		
Employment status (n)				
Full time	5	14		
Part-time	5	16		
Homemaker	2	4		
Retired		1		
Student		2		
Unemployed		1		

Other	1	5		
Ethnicity (n)				
White British	8	31		
White Irish	1			
White other	2	8		
White and Black African		2		
Mixed Other	1			
Indian/British Indian		1		
African		1		
Do not wish to state	1			
Marital status (n)				
Married	7	32		
Separated	2	5		
Divorced		1		
Co-Habiting	1	2		
Single	2	3		
Widowed	1			
Group means of demographic variables (standard deviations)				

Age (child)	9.8 (2.12)	9.6 (1.79)	$t = .82$	.831
Adult Measures				
Parent Attachment Insecurity (VASQ*)	54.07 (9.67)	56.69 (7.25)	$t = .90$	.380
Child Measures**				
Total ADHD symptoms	48.77 (17.46)	16.74 (9.58)	$t = 8.57$	.000
Aggression	3.38 (2.63)	1.46 (1.66)	$t = 6.28$	.000
Hyperactive/Impulsive	12.53 (5.85)	5.34 (4.08)	$t = 4.13$	.001
Inattention	10.38 (3.62)	3.44 (3.01)	$t = 6.29$	.000
Peer Relations	5.38 (4.42)	1.32 (1.98)	$t = 4.70$	.000
Executive Function				
Learning Problems	9.38 (3.69)	3.51 (2.14)	$t = 7.23$	.000
	7.69 (5.02)	1.65 (1.44)	$t = 7.09$	.000
Mood²				
GHQ*	24.46 (5.76)	23.71 (5.14)	$t = .42$	.680

*VASQ (Bifulco et al., 2003)

² The GHQ was used to screen participant for depressive mood. None of the participants' scores indicated severe distress (>32) and no one was excluded on this basis. The GHQ was excluded from further analysis.

** CP-S (Conners et al., 2008)

***GHQ (Goldberg et al., 1997)

Distribution of Adult attachment Style (AS)

Overall, 53.6% of parents were classified as secure; 23.2% met criteria for anxious attachment style; 16.1% for avoidant attachment style and 23.2 % scored high on both dimensions indicating a dual/disorganised style (Table 3). Between group differences revealed more insecure parents in the non-ADHD group, and these were predominantly classified as dual/disorganised (27.9%). This was unexpected based on previous meta-analyses of non-clinical samples which report ranges of 44.9% -72% for secure and 8.3% - 37% for insecure attachment (van Ijzendoorn & Bakermans-Kranenberg, 1996). This is an unusual finding and suggests that non-ADHD parents who took part in this study may have been more vulnerable than would be expected in the normal population.

Table 3. Distribution of attachment between ADHD and non-ADHD parents.

		Parent AS (VASQ*)				Total
		Secure	Insecure-Avoidant	Insecure-Anxious	Dual Disorganised	
Non-ADHD (n)		21	6	4	12	43
% within group		48.8%	14.0%	9.3%	27.9%	100%
		37.5%	10.7%	7.1%	21.4%	76.8%
% of Total						
ADHD (n)		9	2	1	1	13
% within group		69.2%	15.4%	7.7%	7.7%	100%
		16.1%	3.6%	1.8%	1.8%	23.2
% of Total						

Total (n)	30	8	5	13	56
% of Total	53.6%	16.1%	23.2%	23.2%	100%

*VASQ: Vulnerable Attachment Style Questionnaire (Bifulco et al., 2003)

Hypothesis 1

It was hypothesized that parents of children with ADHD would have a higher degree of insecure attachment (VASQ) than parents of children without ADHD. A between groups t-test between group mean total scores on the VASQ revealed that there was no significant difference between the ADHD group ($m = 54$; $SD = 9.67$) compared to controls ($m = 56.69$; $SD = 7.26$) ($t = 1.053$, $p = .297$, $df = 54$). However parents in the non-ADHD group had somewhat higher rates of insecurity of attachment style than parents in the ADHD group, although this difference was not significant, $X^2(1, n=56) = 1.32$, $p = .25$.

This hypothesis was also explored for the different insecure attachment style categories, testing the hypothesis that parents of children with ADHD would be classified by the three insecure styles (Anxious, Avoidant, Dual/Disorganised) more frequently than controls. However a chi square analysis found no significant differences in the distribution of attachment styles between the two groups, $X^2(1, n=56) = 2.69$, $p = .44$.

Hypothesis 2

It was hypothesised that parents with insecure attachment styles would report higher levels of hyperactivity and inattention in their children and that parent insecure attachment would be related to higher overall parent-reported ADHD symptoms in a

combined group analysis.³ Correlational analyses found no significant relationship between overall parent attachment insecurity and overall ADHD symptoms ($r=.157$, $p=.247$). This was further explored for the individual subscales of Hyperactivity and Inattention. There was an association between parent insecure AS and Hyperactivity which just fell short of a significant level at .05 ($r= .257$, $p= .056$) and no significant association between parent attachment and inattention ($r=.171$, $p= .208$). Correlations between dimensions of anxious and avoidant parental attachment styles and child symptoms found an association between avoidant parent AS and child hyperactivity that approached significance ($r= .25$, $p= .063$) (Table 4.)

Table 4. Pearson's correlation coefficients between VASQ dimensions and child ADHD symptoms.

	Hyperactivity	Inattention	Aggression	CP-S Total
Anxiety	.09	.10	.12	.09
Avoidance	.25**	.14	.010*	.17
VASQ total	.25**	.17	.39*	.19

Significant correlations are in **bold type**

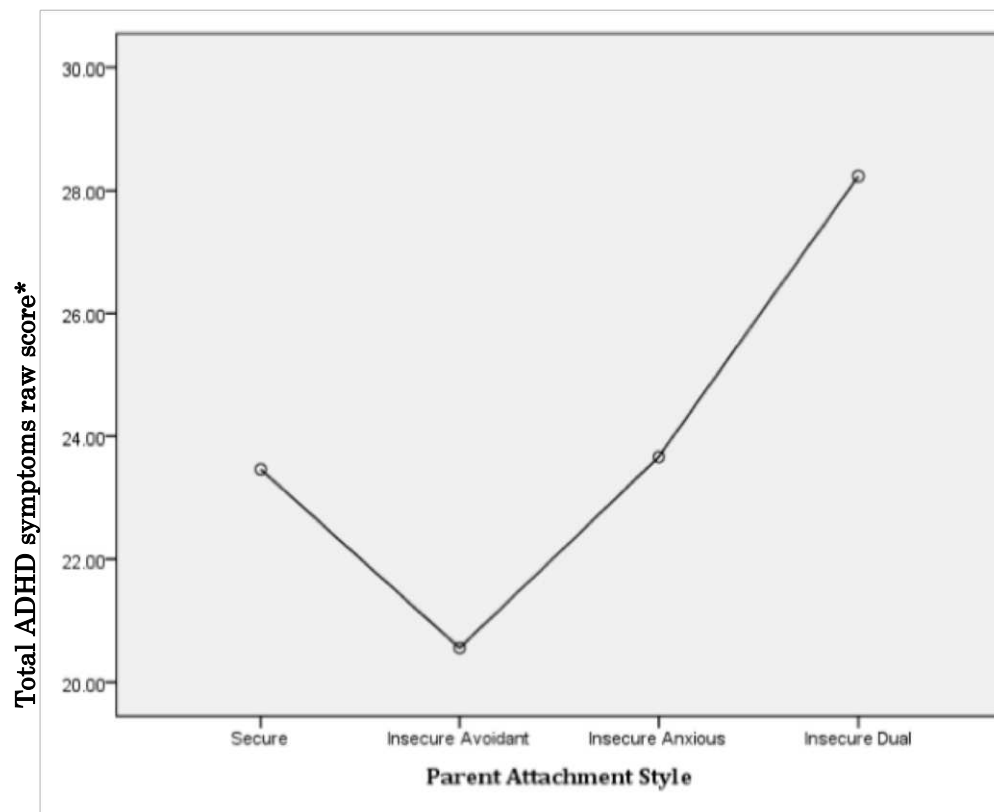
* significant at the $p<.001$ level

**approaching significance at the $p<.05$ level

Dual/ disorganised attachment is allocated when parents score highly on both dimensions of anxiety and avoidance. Dual/disorganised is therefore a dichotomous

³ Parent-reported symptoms are a subjective measure of actual child behaviour. They are limited to describing what the parent observes, which may differ from what is observed by other people and in different contexts, and actual behaviour. No independent measure of ADHD symptoms was used in this study.

variable, which was associated with higher overall severity of ADHD symptoms compared to secure, anxious and avoidant subtypes, (Figure 2.), although a one-way ANOVA yielded no significant differences between groups, $F(3, 55) = 0.41, p=.742$.



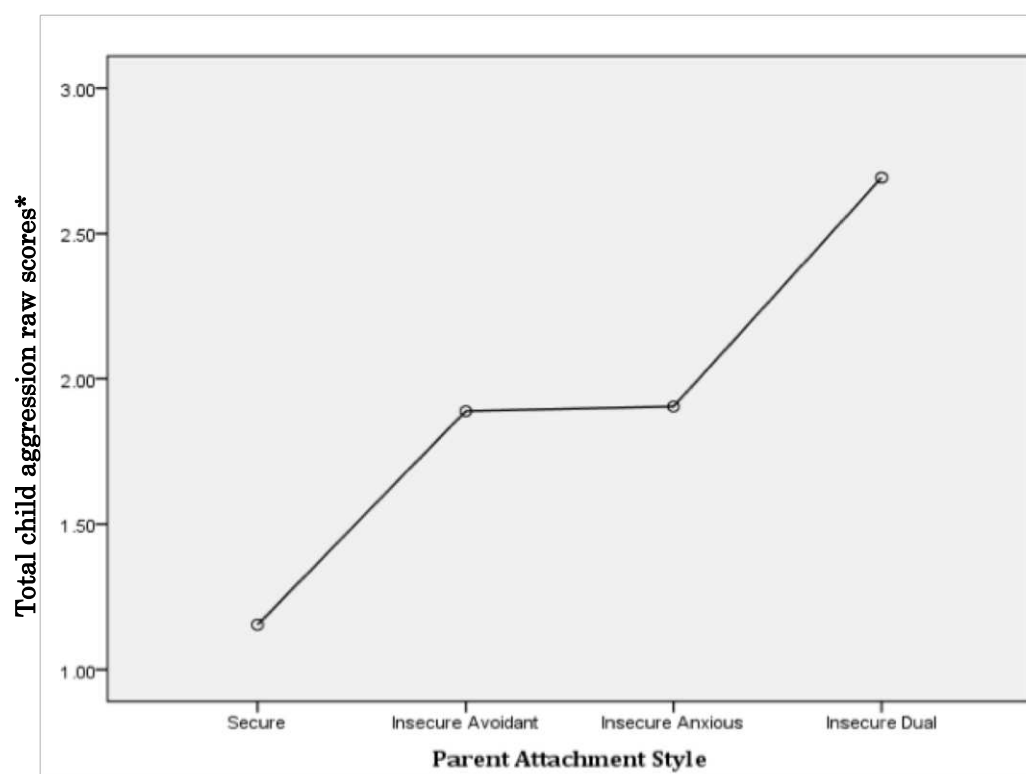
*Range: 0-100

Figure 2. Child ADHD total symptoms (CP-S; Conners, 2008) by parent AS (VASQ; Bifulco et al., 2003).

Hypothesis 3

It was hypothesized that parent attachment insecurity would be associated with reported child aggression. There was a highly significant relationship between parent

attachment insecurity and Aggression ($r = .391$, $p = 0.003$) (Table 4) and the relationship between parental attachment styles and child aggression scores is presented in Figure 3.



*Range: 0-8

Figure 3. Total child aggression scores (CP-S; Conners, 2008) by parent AS (VASQ; Bifulco et al., 2003)

This was further explored by a regression analysis of the attachment factors contributing to hyperactivity and aggression scores. Dual/Disorganised parent attachment most strongly predicted Aggression, $b = .40$, $t(2) = 2.63$, $p = .011$.

Dual/Disorganised attachment also explained a significant proportion of variance in aggression scores, $F(52) = 4.79$, $p = .012$ (Table 5). Blank cells are due to the predictor

being excluded from the analysis as there was no significant correlation with the outcome variable.

Table 5. Summary of simple regression analysis of attachment variables predicting child ADHD symptoms

Variable	Hyperactivity			Aggression		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Anxiety	-.05	.50	-.01	-.01	.08	-.02
Avoidance	.59	.32	.25			
Dual/Disorganised				.11	.04	.40*
	<i>R</i> ²	.06			.15	
	<i>F</i>	1.8			4.8*	
	<i>df</i>	2			2	

Significance level: $p < .05$.

Discussion

Parent attachment styles and ADHD

AS is “the systematic pattern of relational expectations, emotions, and behaviour that results from internalization of a particular history of attachment experiences” (Shaver, Mikulincer & Pereg, 2003, p.79) and relates to parenting, responsiveness and sensitivity,

partner choice, and parental stress (Steele, Steele & Fonagy, 1996; Johnston & Mash, 2001; Wahler & Meginnis, 1997). In this study parent-reported levels of child aggression and hyperactivity were associated with parents own attachment insecurity. Previous research has suggested a common underlying mechanism of poor affect regulation as both a consequence of insecure infant attachment and a contributing factor in the aetiology of ADHD (Barkley, 1997; Steele et al., 1996). There was no association between attachment and inattention, in line with previous research, which found that parents were less likely to report non-disruptive behaviours (Fearon & Belsky, 2004).

Despite children in the ADHD group being significantly more impaired, parents of children with ADHD were not more insecure than controls, and the initial hypothesis of this study was not supported. Furthermore there was a higher prevalence of insecure attachment in the control group than in the clinical sample, where attachment distribution was normative. Due to the sampling in this study, parents in the non-ADHD sample self-nominated to take part and this may have led to parents with more concerns about their children's behaviour participating. This finding may also be explained by the ADHD diagnostic procedure, which should include a full developmental history to identify any confounding factors that might better explain symptoms, such as parental dysfunction. Therefore the ADHD diagnosis might preclude parental attachment problems in this study, whereas children with symptomatic ADHD symptoms might be a population whose primary aetiology is systemic.

Further analyses found that parents with insecure attachment style reported their children as marginally more hyperactive, and when such insecurity was characterised by a Dual style, with features of both high anxiety and avoidance, they reported significantly more aggression in their children. However this association was found for symptomatic ADHD rather than ADHD diagnosis. Parents with a disorganised attachment style, at the non-clinical end of the spectrum, are shown in the research

literature to be inconsistent and unpredictable and display moderate levels of anxiety (fear and vulnerability) in relationships as well as avoidance (angry and distant) (Bifulco & Thomas, 2013). At marked levels, disorganised attachment style is likely to be highly incompetent, frightening and/or neglectful (Lyons-Ruth & Jacobvitz, 1999). An association between parent AS and ADHD symptoms in a combined clinical and non-clinical sample supports the idea that ADHD symptoms in normally developing children may be explained in part by features of the attachment relationship. This study is limited to draw conclusions about clinical ADHD, as parent attachment was not associated with symptoms in the diagnosed sample.

Attachment and hyperactivity

In the combined sample there was a marginally significant relationship between insecure parent AS and child hyperactivity, and a trend towards a significant association between avoidant AS and child hyperactivity. This provides some support for the theory that children with less emotionally available parents may use hyper-activating strategies to elicit responsiveness, as avoidant AS is typically characterized by rejection and lack of empathy (Bifulco & Thomas, 2013).

Parents with avoidant attachment styles may struggle to assist their children in developing regulatory capacities in infancy, and may subsequently be less able to manage hyperactive behaviour with a tendency towards avoidance and withdrawal. Children may perceive this as threatening and increase attempts to elicit attention through further hyperactivity.

Attachment and aggression

Insecure infants are more aggressive and less compliant than their secure counterparts (Main & Goldwyn, 1984) and this association has been supported by the present study,

with an association between insecure parent attachment and child aggression in a combined sample. A secure attachment relationship is a protective factor against developing aggressive patterns of behaviour later in life due to the ability to regulate emotions and parenting that fosters pro-social values of empathy, compassion, and morality (Eisenberg, Spinrad & Morris, 2013). Aggressive symptoms in this sample were elevated, indicating more concerns than are typically reported.

In this study a Dual/disorganised style parent AS most powerfully predicted aggression in children. Aggression and disorganised attachments are documented to be associated with unresolved loss, fear, and trauma of the mothers, who typically have histories of family violence and abuse (Lyons-Ruth, Alpern, & Repacholi, 1993) and may display confusing messages and inappropriate responses to their child's signals (e.g., laughing when the child is in distress) (Lyons-Ruth, 1996; Main et al., 1985; Spieker & Booth, 1988). Children experiencing a lack of felt security may resort to aggression as a secondary communication, related to vulnerability, insecurity, lack of safety and need for power and control (Bifulco & Thomas, 2013). Children not only learn aggressive behaviour from parents but resort to aggression specifically when they feel vulnerable and perceive the environment to be hostile (Singh, 2011).

The Disorganised attachment style is documented as being characterised by lack of parenting coherence combined with high fear and anger states, which may be important in predicting aggressive behaviour in children. Similarly parents with a Disorganised style are more likely to have experienced abuse or neglect themselves or to have experienced unresolved losses and greater social adversity (Lyons-Ruth, 1996; Bifulco & Thomas, 2013). Reviews of parent-focused interventions for ADHD find that families are often dysfunctional in a range of areas including, maternal stress, depression and inappropriate parental discipline (see Sonuga-Barke et al., 2001). Therefore parents may experience their children's aggression as particularly rejecting and punitive in the

context of their own attachment histories, thus contributing to the cycles of distress (Bifulco & Thomas, 2013). The measures used here did not explore family histories and other contextual variables, but these might be incorporated into future research exploring these associations.

Methodological Considerations

In this study, only parental scores on the Conners scales were used, and there was no independent measure of ADHD symptoms, increasing the likelihood of report biases. In clinical diagnosis parent reports are typically used in conjunction with teacher and, in some cases, self-reported symptoms. However, evidence suggests that agreement between different reporters of child symptoms is only modest (Briggs-Gowan, Carter & Schwab-Stone, 1996) and mothers with high levels of anxiety and depression may report symptoms, which are not reported by children or their teachers (Najman et al., 2001).

Disorganised or avoidant individuals may also “distort, disorganise, or limit access to memories, feelings, intentions” (Main, 1991, p146), therefore reducing correspondence to actual behaviour. Using multiple self-report measures from the same individual is also prone to effects of shared-method variance as well as response-set biases (Rholes & Simpson, 2004). Furthermore, the CP-S uses uniform negative wording of items and this may result in a more negative response set than would be elicited from other measures of behaviour.

In this study raw scores were used for correlational analyses, however in clinical diagnosis these can be transformed into normed T-scores which allow for a greater depth of interpretation of scores based on what would be expected in the normal

population. Therefore by using raw scores, this study is limited in being able to describe the clinical group or to make interpretations about the clinical severity and meaning of these scores.

Clinical implications

If treatment of ADHD were based on attachment and relational dynamics, it would consider the functioning of all family members (Crittenden, 1997). Helping parents to resolve their own anxieties and anger related to their own attachment experiences, could alter the emotional climate in families where the parent-child dynamic is problematic. ADHD symptoms undoubtedly have a detrimental effect on parents, who feel increasingly stressed and powerless. Family interventions might address both aetiological factors as well as transactional effects.

Implications of the study are that parent AS may be an important factor in the development of more aggressive and hyperactive behaviours in school-aged children. Attachment based interventions focus on the characteristics of the child-parent relationship and parenting style, such as empathy, hostility and availability and also parents own attachment histories and attempt to bridge emotional disconnects between parent and child through relationship-building components. Diagnosis might move beyond reductive models locating disorder either in the child or the environment, towards more complex ones that allow for the interplay between the two.

Limitations of the present study

The total sample size fell short of that estimated in the *a priori* power calculations, which precluded some analyses by subgroup, such as ADHD subtype and gender, and limits the generalisability of the findings. A major limitation of using a small sample is the possibility of producing false-positive results, thereby over estimating the magnitude of an association, and not being able to statistically control for the effects of confounding factors. A small sample also increases the likelihood of type 2 errors (missing significant associations). Therefore studies with small samples may not produce reliable outcomes and it is important not to draw strong conclusions on the basis of these findings. Future research might explore these associations with a larger sample as significant differences between ADHD and control groups have been found in previous research (e.g. Kissgen et al., 2009). Use of a cross-sectional design also meant the study was unable to attribute causal effects.

Lack of additional information such as child attachment status, family history, and further measures of parent mental health, means this study is limited in explaining the association found between attachment insecurity and child symptoms. Interviews were not used due to time pressures, and also because of measurement burden on the respondents, however, self-report measures are at risk of bias in reporting. Additional measures may have been illuminating, such as marital discord, parental anxiety and hostility, all of which have been associated with hyperactivity (Brandon, 1971; Gillberg, Rasmussen et al., 1982; Tallmadge & Barkley, 1983).

This study does not address the contribution made by genetic research and it may be that clinical ADHD is best explained by genetic variance whereas symptomatic ADHD is better accounted for by features of the attachment relationship. Furthermore, children in the ADHD group were receiving treatment, although details were not known. If children were receiving medication, this may have had an impact on their behaviour and subsequently the parent reports of symptoms.

Recommendations for future research

ADHD remains a disorder and not a disease, with the lack of definitive diagnostic and aetiological definition that implies (Crittenden, 1997). The importance of psychological and environmental factors should not be over-looked, as there may be alternative pathways to the same symptoms and studies of attachment and psychopathology looking at relating style are limited (Gerlsma & Luteijn, 2000; McCarthy, 1999). Whilst the study remains hampered by the limitations acknowledged, the findings support an attachment perspective in which parental attachment histories, parent-child dynamics, and insecurity contribute to how children's hyperactivity and aggression may be understood as a strategic, if maladaptive, defense against confusing and unpredictable parent attachment style. Parent attachment may also be a risk or a resilience factor in ADHD, with secure attachment protecting against more adverse outcomes such as comorbid ODD/CD and insecure attachment increasing risk through insensitive parenting. Further research might explore this through longitudinal designs exploring both child and adult attachment in an ADHD sample over the course of development.

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Section C: Critical Appraisal

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SALOMONS

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1. What research skills have you learned and what research abilities have you developed from undertaking this project and what do you think you need to learn further?

My intention when starting this research project was to contribute something to the literature addressing the need for better understanding of developmental disorders in children. I personally felt concerned about the increasing number of diagnoses of biological disorders in children, at an increasingly young age, and more importantly the medical approach to treatment, which usually favours stimulant medication. I had experienced first-hand as a trainee clinical psychologist, working in a specialist adolescent service, how diagnosis was often resorted to before a full investigation of the systemic and developmental nature of problems was carried out. I had initially hoped that by using an attachment framework to explore symptoms of ADHD, the most common child psychiatric diagnosis in the world, to expand perspectives on how behavior is interpreted, how problems are identified and who they are problems for, and how they come to be localized in children when their etiology is so often complex and diffuse.

Conceptualizing and writing a doctoral dissertation is a challenging task and I have learnt that it can be more challenging when one's motivation is personal, as it requires refining and narrowing one's ideas, often felt passionately, into definable and measurable constructs. It also demands deep reflection not only on the subject under study, but also on one's personal life, and in my experience, this task has promoted personal growth, both positive and challenging. My first learning was that when answering questions of social and clinical importance, to start with a hypothesis, but "not to fall in love" with it (Rivett, 2012). The task required a systematic review of a wide area of literature and an important skill that was developed through this process

was how to identify relevant literature from a broad research base and to subsequently synthesize the information in a way that was approachable to the reader and that answered the question at hand. It was important to remain unbiased, not to be directed by my personal interest and professional preference, but to remain an impartial witness to the literature.

The experience of designing and conducting an empirical research project according to NHS ethical standards taught me a great deal about the importance of fully understanding and accepting the importance of ethical practice, especially when dealing with a sensitive clinical issue. I feel that I have gained a respect for the clients and participants who contribute to research and who are willing to share their personal and often difficult experiences honestly and openly so that we can use that information to expand our own understanding. It is a privilege to be invited into those inner worlds and it has increased my sense of responsibility in conducting research carefully, respectfully and with sensitivity to the individual. I think this is most salient in quantitative research where the individual can so easily be lost in the numbers and figures. The process of applying for ethical approval (NRES) was one that required me to question my motives and my practice at every step in dealing with clinical participants. Another key things I have learnt in this process is how to work sensitively with other clinicians and professionals, particularly those helping to recruit participants. I feel that this experience has increased my confidence in speaking about my ideas with other professionals, but also learning how to communicate research in a way that inspires others to participate but that remains clear and concise.

2. If you were able to do this project again, what would you do differently and why?

The measures used in this research, although validated and reliable, had some inherent weaknesses, which could be minimized by using different measures. The Connors Parent Report uses uniform negative wording of items and this may result in a more negative response set. I would have also included child self-report and a more objective measure of child behaviour such as a teacher reports, or the Strengths and Difficulties Questionnaire (SDQ; Goodman, R. 1997) to reduce parent report biases. It was not possible here due to the constraints of time and resources, but it would have added an important element of objectivity to measures of child behaviour in the study.

There were unforeseen difficulties in recruiting participants for this study, especially for the ADHD group. I had not anticipated how difficult it would be to recruit participants in CAMHS as well as to ask for time from pressured clinicians working in those services. If I conducted the research again I would initially approach more NHS sites, casting a wider net, and in hindsight, I would have been more present in the clinics and services so that I could take more personal responsibility for recruiting participants rather than relying on other professionals. I asked clinicians to initially approach families as they had an existing relationship with them and it was thought that this would be helpful as ADHD is a sensitive issue for parents. I underestimated the importance of face-to-face contact with parents, especially those who might be less trusting of services, or might be harder to reach, or have less frequent contact with services and I now think a more direct approach would have been more effective.

Methodologically, I would also incorporate qualitative elements into the study, which would have given further insight into parent perceptions for their children through comments on the Connors Parent report regarding their children's strengths.

I would also collaborate with a service user, ideally a parent of a child with ADHD, to help with ethical issues arising in the context of recruitment and to ensure that parents felt confident and safe to take part in the study.

3. Clinically, as a consequence of doing this study, would you do anything differently and why?

The results of this research question the medical model of ADHD and provides some evidence that symptoms of hyperactivity and aggression may be related to attachment difficulties, arising in the context of a dual anxious and avoidant parent AS. This has possible implications for assessment and treatment of ADHD, both for young people and for the wider family. I would encourage clinicians to take into account the parent's own history, emotional well being, level of support and to gather contextual information from as many sources as possible including family members. I would propose that when formulating, to incorporate attachment theory into the model and consider the intergenerational transmission of attachment. Importantly, in this study aggression should be thought about sensitively in the context of the family environment, and the child's underlying sense of vulnerability would be a key focus of therapy.

This research would support early intervention for families with ADHD and the use of attachment based interventions, focusing on the child-parent relationship. I would also discuss options with families before considering diagnosis, such as alternative explanations for behaviour, and develop ways of discussing attachment difficulties with families that are inclusive, accepting and non-blaming.

4. If you were to undertake further research in this area what would that research project seek to answer and how would you go about doing it?

Further research would include outcome measures of child attachment, parent family history and psychological well-being and more detailed information about family support. What emerged from this project was the need for a more in depth investigation of the experiences of young people with ADHD and their families who can often be vulnerable in multiple domains including social isolation, mental health and stress. This study has discussed some of the implications for understanding ADHD as attachment related behaviour and the implications not only for treatment but also for the individual child. Further research might use qualitative measures to explore young people's understanding of the ADHD diagnosis, how it impacts on their identity, self-perception, mood and feelings about themselves. This would give important insight into the personal and individual impact of the ADHD diagnosis. This might also incorporate questions for parents about how they understand children's hyperactivity and aggression, to explore parent potential experiences of being punished or rejected by their children.

I would also like to learn more about using mixed research methods as I feel this project would have benefitted from qualitative elements. The Connors parent report gave a small opportunity for parents to report on other concerns they had about their child and to comment on their child's strengths. This qualitative data was not used in this research, but in future research I would integrate these aspects into quantitative methods, possibly using a thematic analysis to explore emerging themes

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Section D: Appendix of Supporting Material

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Appendix A. Attachment categories according to child and adult attachment measures

Strange Situation (Ainsworth et al., 1978)	Adult Attachment Interview (AAI) (George, et al. 1985)	Self-Report (Brennan, Clark & Shaver, 1998)
<p><i>Secure</i></p> <p>Able to explore surroundings, show appropriate signs of missing the mother and react with interest when she returns.</p>	<p><i>Autonomous</i></p> <p>Produces narratives that demonstrate a valuing of attachment relationships. Childhood narratives are coherent and clear.</p>	<p><i>Secure</i></p> <p>Low avoidance and anxiety in intimate relationships. Comfortable with touch and intimacy.</p>
<p><i>Avoidant</i></p> <p>Failed to show appropriate signs of missing mother when she left the room and ignored her upon return.</p>	<p><i>Dismissing-Avoidant</i></p> <p>Lack of coherent narrative about childhood experiences. Dismissing of attachment relationships and idealising significant others. Inconsistencies in descriptions of childhood and normalising of traumatic events.</p>	<p><i>Dismissing</i></p> <p>High avoidance of intimacy and touch but low anxiety when in a relationship. A tendency to be self reliant and independent.</p>
<p><i>Anxious-Ambivalent</i></p> <p>Wary of being left alone, made no attempt to explore surroundings, preoccupied by the mother's absence but not emotionally contained by her return.</p>	<p><i>Preoccupied</i></p> <p>Inconsistent narratives about childhood. Angry or passive reactions towards past experiences. Preoccupied with past relationships. Lengthy descriptions, often unclear.</p>	<p><i>Preoccupied</i></p> <p>Low avoidance of intimacy but high levels of anxiety. Demonstrates need for closeness but often seeks more than they receive.</p>
<p><i>Disorganised/unresolved</i></p> <p>Failure to develop any strategy to gain the mothers attention. May freeze or cling to the mother.</p>	<p><i>Unresolved-Disorganised</i></p> <p>Lapses in descriptions of trauma with confusion between reality and fantasy.</p>	<p><i>Fearful</i></p> <p>High levels of avoidance and anxiety in intimate relationships. Avoids touch and closeness but preoccupied by fears of abandonment and jealousy.</p>

Appendix B. DSM-V Diagnostic Criteria for ADHD* (APA, 2013).

People with ADHD show a persistent pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development:

Inattention

Six or more symptoms of inattention for children up to age 16, or five or more for adolescents 17 and older and adults; symptoms of inattention have been present for at least 6 months, and they are inappropriate for developmental level:

- Often fails to give close attention to details or makes careless mistakes in schoolwork, at work, or with other activities.
- Often has trouble holding attention on tasks or play activities.
- Often does not seem to listen when spoken to directly.
- Often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (e.g., loses focus, side-tracked).
- Often has trouble organizing tasks and activities.
- Often avoids, dislikes, or is reluctant to do tasks that require mental effort over a long period of time (such as schoolwork or homework).
- Often loses things necessary for tasks and activities (e.g. school materials, pencils, books, tools, wallets, keys, paperwork, eyeglasses, mobile telephones).
- Is often easily distracted
- Is often forgetful in daily activities.

Hyperactivity and Impulsivity

Six or more symptoms of hyperactivity-impulsivity for children up to age 16, or five or more for adolescents 17 and older and adults; symptoms of hyperactivity-impulsivity have been present for at least 6 months to an extent that is disruptive and inappropriate for the person's developmental level:

- Often fidgets with or taps hands or feet, or squirms in seat.
- Often leaves seat in situations when remaining seated is expected.
- Often runs about or climbs in situations where it is not appropriate (adolescents or adults may be limited to feeling restless).
- Often unable to play or take part in leisure activities quietly.
- Is often "on the go" acting as if "driven by a motor".
- Often talks excessively.
- Often blurts out an answer before a question has been completed.
- Often has trouble waiting his/her turn.
- Often interrupts or intrudes on others (e.g., butts into conversations or games)

In addition, the following conditions must be met:

- Several inattentive or hyperactive-impulsive symptoms were present before age 12 years.
- Several symptoms are present in two or more settings, (e.g., at home, school or work; with friends or relatives; in other activities).
- There is clear evidence that the symptoms interfere with, or reduce the quality of, social, school, or work functioning.
- The symptoms do not happen only during the course of schizophrenia or another psychotic disorder. The symptoms are not better explained by another mental

disorder (e.g. Mood Disorder, Anxiety Disorder, Dissociative Disorder, or a Personality Disorder).

Based on the types of symptoms, three presentations of ADHD can occur:

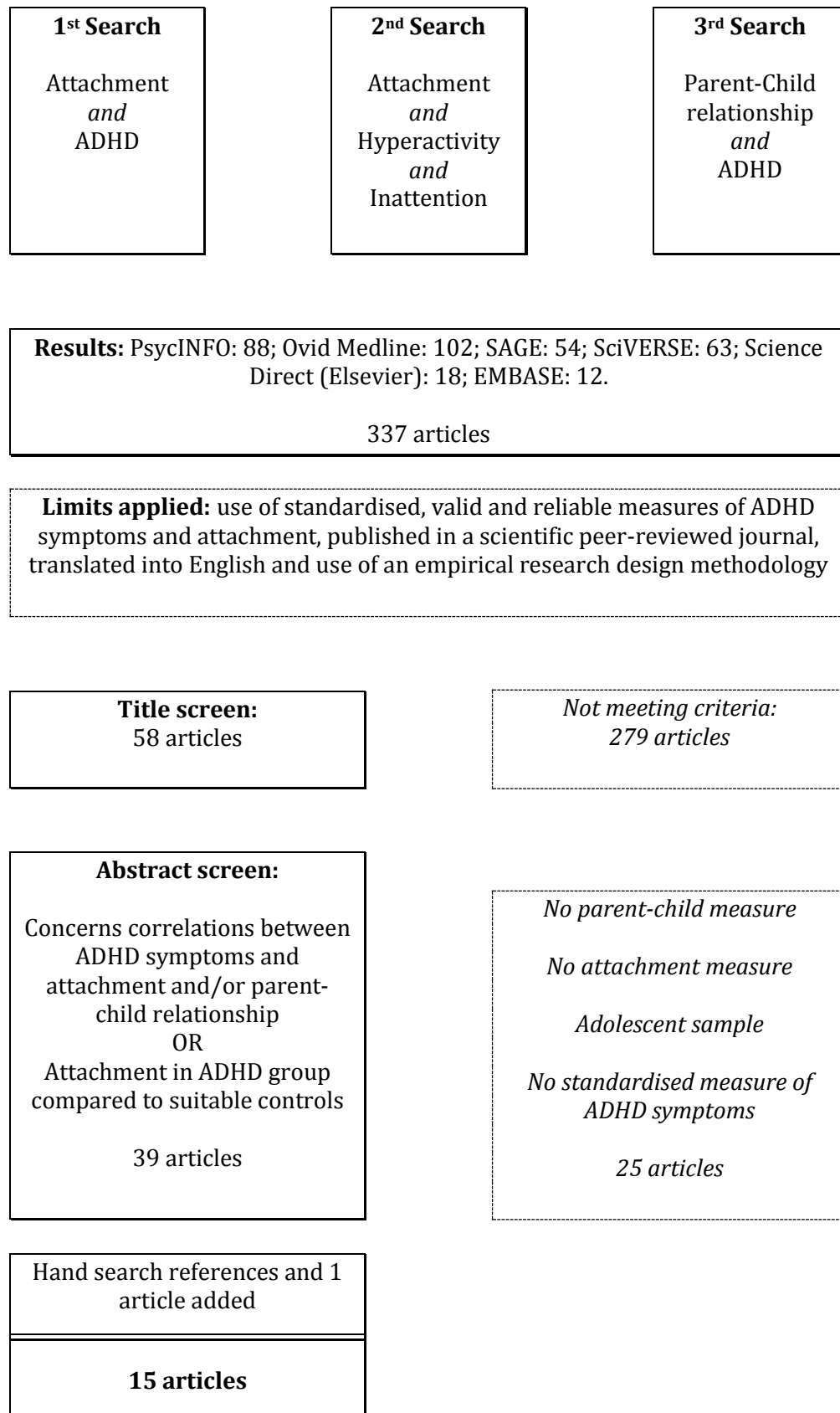
Combined Presentation: if enough symptoms of both criteria inattention and hyperactivity-impulsivity were present for the past 6 months.

Predominantly Inattentive Presentation: if enough symptoms of inattention, but not hyperactivity-impulsivity, were present for the past six months.

Predominantly Hyperactive-Impulsive Presentation: if enough symptoms of hyperactivity-impulsivity but not inattention were present for the past six months.

*Adapted from *Diagnostic and Statistical Manual of Psychiatric Disorders DSM-V* (2013) with permission from the American Psychiatric Association.

Appendix C. Flow diagram of literature search strategy



Appendix D. Summary of studies included in literature review

First Author / Year	Article Title	Location	Keywords	Design	Sample characteristics (n)	Methods and Measures
Association between child insecure attachment and child ADHD						
Clarke / 2002	Attention Deficit Hyperactivity Disorder is associated with Attachment insecurity	Australia	Attachment, ADHD	Cross-sectional	Age: 5-10 yrs (38)	Demographic interview Revised Conners Parent Rating Scale (CPR) Separation Anxiety Test Self interview Family Drawing
Crittenden / 2007	Familial Contributions to ADHD	USA	ADHD, Attachment	Case study	Age: 10 years Gender: Male (1)	Dynamic Maturation Model (DMM) School-age Attachment Assessment (child) Adult Attachment Interview (AAI)
Finzi-Dottan / 2006	ADHD, temperament, and parental style as predictors of the child's attachment patterns	Israel	ADHD, Temperament, Attachment styles, Parental style	Cross-sectional	Age: 7-11 yrs (65)	Children's Attachment Style Classification Questionnaire (ASCQ) Dimension of Temperament survey for children (DOTS)
Green / 2007	Disorganised attachment representation and atypical parenting in school age children with externalizing disorder.	UK	ADHD, Attachment, maternal EE	Cross-sectional	Age: (mean) 7.3 yrs Comorbid diagnosis of CD or ODD. (69)	Manchester Child Attachment Story Task (MCAST) Child symptoms (ECBI) Eyberg Child Behaviour Inventory (ECBI) Atypical parenting/Expressed Emotion (EE) Beck Depression Inventory (BDI)

Guttman-Steinmetz / 2011	Association between mothers and children's secure base scripts in ADHD and community samples.	USA	Attachment, ADHD	Cross-sectional	Mother-child dyads (79)	Attachment Script Representation Task (ASRT) Attachment Story Completion Task (ASCT) Child Behaviour Check List (CBCL)
Association between child insecure attachment and ADHD symptoms						
Bohlin / 2012	Disorganized attachment and Inhibitory capacity: predicting externalizing problem behaviour.	Sweden	Attachment, ADHD, externalizing problems	Prospective	Community study Age: (mean) 5 yrs (65)	DSM-IVR (APA, 2000). Continuous Performance Test (CPT) Attachment Doll Play Classification (ADCS) Child Behavioural Questionnaire (CBQ)
Fearon / 2004	Attachment and Attention: Protection in Relation to Gender and Cumulative Social-Contextual Adversity.	USA	Attachment, Attention	Prospective	Mother-infant community dyads. Subset of NICHD study. Age: T1: 15 mts; T2: 54 mts (918)	Strange Situation Procedure (SSP) Continuous Performance Test (CPT) Child Behaviour Questionnaire (CBQ) Child Behaviour Check List (CBCL) Infant Temperament Questionnaire (ITQ)
Thorell / 2012	Parent-child attachment and executive functioning in relation to ADHD symptoms in middle childhood.	Sweden	Parent-child Attachment, ADHD	Prospective	Age: 8.5 yrs and 1 yr follow-up (100)	Attachment Story Completion Task (ASCT) Stroop test WISC-III ADHD Teacher Rating Scale (DSM-IV) Child Behaviour Questionnaire (CBQ)
Association between early parent-child interactions and ADHD symptoms						
Belsky / 2007	Parenting, attention and externalizing	UK	Parenting, attention,	Prospective	Age: T1: 54 mts; T2: 6 yrs; T3: 8 yrs; T4:	Observations from videotaped interactions

	problems: testing mediation longitudinally, repeatedly and reciprocally.		externalizing problems, maternal sensitivity		10 yrs Subsample of NICHD Study. (1,364)	Continuous Performance Test (CPT) Child Behaviour Questionnaire (CBQ)
Carlson / 1995	A developmental investigation of Inattentiveness and hyperactivity.	USA	Developmental, Hyperactivity, ADHD	Prospective	Mother child dyads from low socio-economic group Age: <i>T1</i> : 6 mts; <i>T2</i> : 3.5 yrs; <i>T3</i> : 6-8 yrs (191)	“Barrier Box” task Child Behaviour Check List (CBCL) Observations from videotaped interactions Interviews and family history. Neonatal Behavioural Assessment Scale (NBAS) Carey Infant Temperament Questionnaire IPAT Anxiety Scale Personality Research Form (PRF)
Jacobvitz / 1987	The early caregiver-child relationship and ADHD in kindergarten: A prospective study.	USA	ADHD, parent-child relationship, maternal care, hyperactivity	Prospective	Age: <i>T1</i> : 3 - 6 mts; <i>T2</i> : 24 mts; <i>T3</i> : 30 mts; <i>T4</i> : 42 mts; <i>T3</i> : 6 yrs (68)	Observations from videotaped interactions Temperament Survey Block by Box Test Child Behaviour Check List (CBCL)
Keown / 2012	Predictors of boys’ ADHD symptoms from early to middle childhood: the role of father-child and mother-child interactions.	New Zealand	Parent-child interaction, ADHD	Prospective	Age: <i>T1</i> : 4 yrs; <i>T2</i> : 7 yrs (93)	Observations from videotaped interactions Parental account of childhood symptoms (PACS) Strengths and Difficulties Questionnaire (SDQ) ADHD Rating Scale- IV
Lifford / 2007	Parent-Child relationships and	UK	Parent-child relationship,	Prospective	Age: 11-13 yrs	Child Behaviour Check List Child Report of Parent Behaviour

	ADHD symptoms: A longitudinal analysis.		ADHD		(194)	Inventory (CRPBI)
Association between Parent insecure Attachment and child ADHD						
Pinto / 2006	ADHD and infant disorganized attachment, A prospective study of children next-born after still-birth.	UK/ Sweden	Attachment, ADHD	Prospective	Age: <i>T1</i> : 1 yr; <i>T2</i> : 6-8yrs (53)	Structured Clinical Interview for DSM-IV (SCID) Adult Attachment Interview (AAI) Strange Situation Procedure (SSP) ADHD Rating Scale (ADHD-RS) Wender Utah Rating Scale (WURS)
Quiroga / 2007	Attachment and Hyperactivity: An exploratory Study of the mother-child bond.	Spain	Mother-child bond, attachment hyperactivity	Cross-sectional	Age (mean): 7 yrs (34)	Child Symptoms Inventory Attachment Story Completion Task (ASCT) Adult Attachment Interview (AAI)

Abbreviated terms: T1, Age at Time 1 (baseline); T2, Age at Time 2 (follow-up); mts, months; yrs, years; NICHD, National Institute of Child Health and Human Development; DSM-IV, Diagnostic and Statistical Manual of Mental Disorders, 4th Edition; IPAT, Institute for Personality and Ability Testing.

Appendix E. Categories of the Attachment Style Interview (ASI) and scoring information (Bifulco et al., 2002)*

The ASI (Bifulco, et al., 2002) is a social psychological measure of attachment style in adults and uses 4-point scales to determine relationship characteristics with partner and two self-selected close support figures, including confiding, emotional support, positive and negative interaction, and felt attachment. Overall summary scales rate the quality of each relationship from 'very close' to 'inadequate' support. Various attitudinal scales reflect mistrust, constraints on closeness, fear of rejection, self-reliance, desire for company and anger, and are combined into an overall AS categorisation; Secure or Insecure- Anxious (enmeshed or fearful) or Avoidant (Angry-Dismissive or withdrawn), and a rating of the intensity of the insecurity as 'marked', 'moderate' or 'mild'. The presence of two coexisting styles (such as Angry dismissive and Fearful) denote Dual/disorganised styles. Those with good relationships and positive attitudes are classified as Secure.

* Table adapted with permission from the Lifespan Research Group, King's College London.

Categories
Secure, Enmeshed, Fearful, Angry-Dismissive, Withdrawn, Dual/Disorganised. Each insecure style is rated as 'marked', 'moderate', or 'mild'
Reliability and validity
Inter-rater reliability is good (0.80) for overall scale and average (0.75) for subscales. Validity tested in terms of predicting the onset of major depression and as a mediator for childhood neglect/abuse and disorder.
Clearly Secure (lack of negative attitudes, good relationships)
A stable and flexible style with a lack of negative attitudes denoting either anxious or avoidant attachment. Comfort with closeness and appropriate levels of autonomy. Good ability to make and maintain relationships and evidence of good support.
Anxious Attachment Styles
Enmeshed (High fear of separation)
Dependent attachment style as exhibited by high Desire for Company, and low Self-

reliance and fear of separation. Individuals tend to have relatively superficial relationships and despite many social contacts may have few which are objectively close. This style will involve high Anger – typically when dependency needs are not met. This may lead to high ambivalence and ‘push-pull’ in relationships. However anger is not always present. Thus avoidant characteristics such as Constraints on Closeness and Fear of Rejection will be low.

Fearful (High fear of rejection)

This attachment style avoids anxiety around being rejected or let down. This may relate to actual experiences of having been let down which has generalized to fear of future interactions. There may be a high desire to get close to others, together with fear of doing so which can lead to loneliness. Fearful style will always have ‘1: Marked’ or ‘2: Moderate’ on Fear of Rejection, and is the only style that rates high on this scale. Anger is absent, as is fear of separation.

Avoidant attachment styles

Angry-Dismissive (High mistrust and Anger)

This style is characterised by an angry avoidance of others, with high Mistrust, high Self-reliance and low Desire for Company rated. Its key characteristic is high Anger. Individuals usually need a high level of control over their lives, are extremely self-reliant and typically argue with those around them and are denigrating of others. They will have problems making relationships, but will interact with others through their anger. This is often reflected in individual interactions with close others and family as well as in feelings of anger and resentment. Fear of rejection or separation will be absent.

Withdrawn (High self-reliance)

This is a detached style characterised by high Self-reliance, high Constraints on Closeness and low Desire for Company. This is often expressed as desire for privacy and clear boundaries with regard to others. However, there is neither fear of Rejection, fear of separation, or high Anger. It can appear as very practical, rational and non-emotional style.

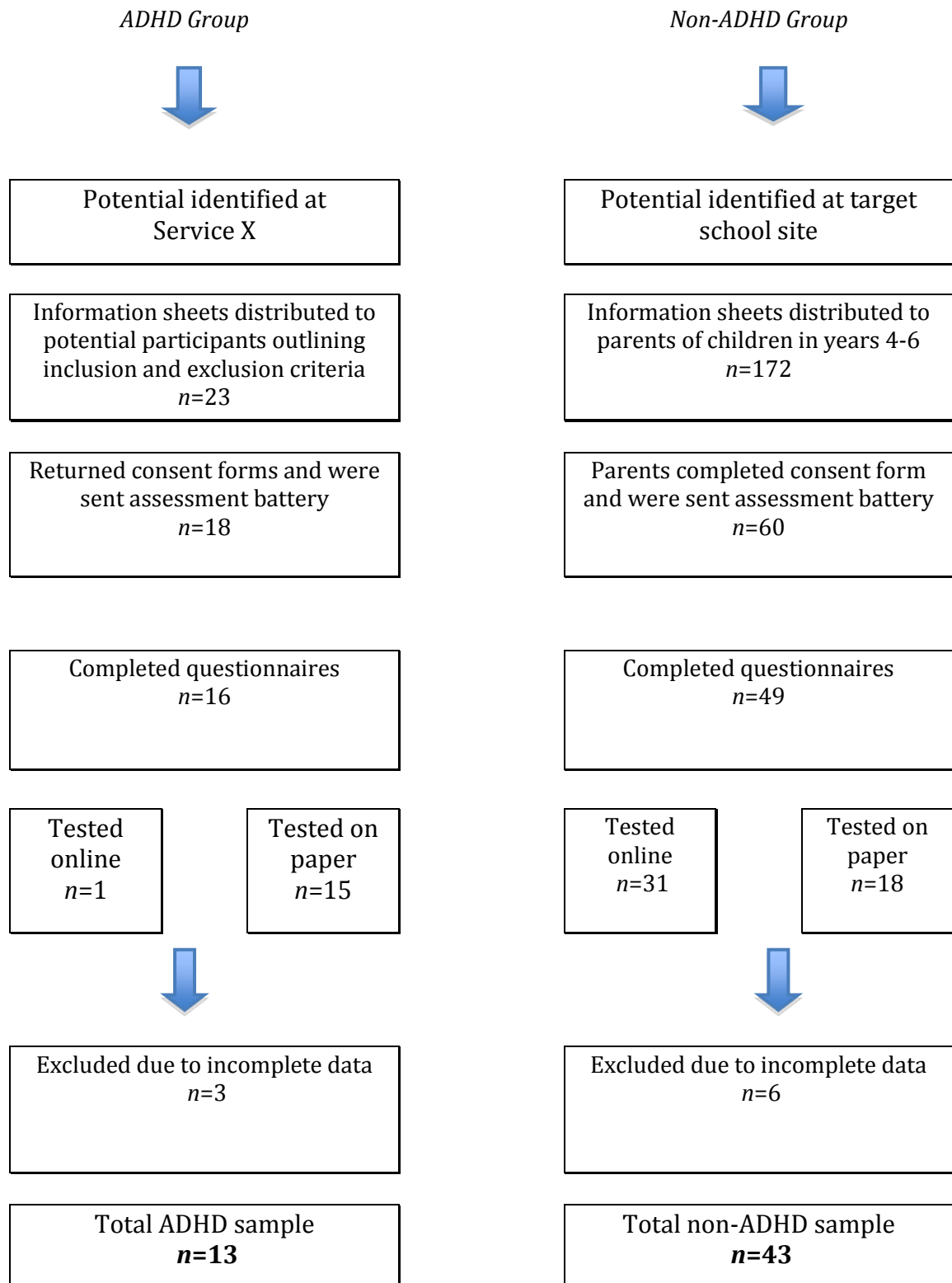
Anxious and Avoidant style

Dual/Disorganised

This dual attachment classification is only considered for those rated markedly or moderately insecure; it has no secure counterpart. It reflects those individuals who are unable to relate to others and for whom no single clear style can be determined from the subscales rated. Both 'primary' and 'subsidiary' attachment styles are rated with precedence given to the more pervasive style, which affects wider relationships. An example of dual rating is when a high degree of both anger and fear in relationships fulfill both Angry-dismissive and either Fearful or Enmeshed types. The two latter can also occur together as Dual styles. The autonomy scales (self-reliance and desire for company) may be rated as 'contradictory' to show the pull in both anxious and avoidant directions.

Appendix F.

Accrual, attrition and exclusions in ADHD and non-ADHD samples.



Appendix G. The General Health Questionnaire-12 (Goldberg & Williams, 1998)

This has been removed from the electronic copy.

Appendix H. The Vulnerable Attachment Style Questionnaire (VASQ) (Bifulco, 2003)

This has been removed from the electronic copy.

Appendix I: Conners 3™ – Parent-Short Form (Conners, C.K., 2008)

This has been removed from the electronic copy.

Information about the Research

Attention Deficit Hyperactivity Disorder (ADHD) and Parent Attachment

Part 1 of the Information sheet

Hello. My name is Georgiana Thomas and I am a trainee Clinical Psychologist at Canterbury Christ Church University. I would like to invite you to take part in a research study.

Before you decide it is important that you understand why the research is being done and what it would involve for you. You should only consent to participating if you want to. If you choose not to take part, you will not be disadvantaged in any way. Please take time to read the following information and discuss it with others if you wish. Please feel free to ask us if anything is not clear or you would like further information.

What is the purpose of the study?

The project aims to explore the relationship between parent attachment style and ADHD. Attachment is a way of describing the relationships that we have with other important people in our lives and particularly with our children. Previous research has found similarities between attachment difficulties and ADHD. In some cases difficulties in attachment relationships may lead to problems with emotional and behavioural problems in young people. Challenging behaviour can also put a strain on relationships and make it more difficult to form attachments. The purpose of this study is to better understand the relationship between attachment and ADHD. This research will help us to refine our assessment of ADHD and help us to think about how we can best help families and young people with ADHD.

Why have I been invited?

You have been invited to take part in this study because you are the parent of a child with ADHD. We would like to invite parents/ caregivers of children aged 6 to 15 years of age with a diagnosis of ADHD, to help us in this research. All caregivers should be fluent in English.

Do I have to take part?

It is up to you to decide to join the study. If you agree to take part, you will be asked to sign a consent form. You are free to withdraw at any time, without giving a reason and the standard of care you receive will not be affected.

What will happen to me if I take part?

Step 1: You will be given 4 short questionnaires

Step 2: You can complete these questionnaires at home or immediately when you receive them. These questionnaires should take no longer than 30 minutes to complete.

Step 3: You will be asked to return your completed questionnaires in a sealed envelope to your health worker. You do not need to put your name or any identifying mark on the questionnaires. They will be kept in a locked drawer so that no one except the lead researcher (Georgiana Thomas) can read them.

What are the possible disadvantages and risks of taking part?

Some of the questions relate to your mood and how you feel in relationships with others. These questions may be distressing to some people. If you are distressed by any of the questions in these questionnaires you are free to stop at any time. If you are worried about your low mood you are advised to seek further support from your GP. One of these questionnaires is used to identify people who may be feeling depressed. Although that is not the intention of our research, if your questionnaire indicates that you might be feeling depressed we may notify your GP with your consent. We would NOT notify your GP without contacting you first.

What are the possible benefits of taking part?

We cannot promise the study will help you but it may contribute to our understanding of young people with ADHD and help to inform assessment and treatment of young people and their families.

What if there is a problem?

If you have any complaint about the way you have been dealt with during the study or any possible harm you might suffer will be addressed. The detailed information on this is given in *Part 2*.

Will my taking part in the study be kept confidential?

Yes. We will follow ethical and legal practice and all information about you will be handled in confidence. The details are included in *Part 2*.

This completes part 1.

If the information in Part 1 has interested you and you are considering participation, please read the additional information in Part 2 before making any decision.

Part 2 of the Information sheet

What will happen if I don't want to carry on with the study?

You are free to withdraw at any time, without giving a reason and this will not affect the standard of care you receive. However, after the questionnaires have been completed and returned your answers will be entered onto a computer with all the other participants' information and it may no longer be possible for your individual answers to be extracted and destroyed. Therefore if you withdraw from the study, we would like to use the data collected up to your withdrawal.

Complaints

If you have a concern about any aspect of this study, you should ask to speak to me and I will do my best to answer your questions [REDACTED]. If you remain unhappy and wish to complain formally, you can do this via the NHS Complaints Procedure. Details can be obtained from:

<http://www.nhs.uk/choiceintheNHS/Rightsandpledges/complaints/Pages/NHScomplaints.aspx>

Will my taking part in this study be kept confidential?

All information collected about you during the course of the research will be kept strictly confidential. All data collected will be link-anonymised using a participant coding system so that parents and their children can be matched and only the lead researchers [Georgiana Thomas/ [REDACTED]] will be able to identify participants by this code. Paper copies of anonymised research data and results (e.g. questionnaires) will be securely retained for the duration of the project plus seven years post study completion, at which point they will be securely destroyed. An electronic copy of the data will be retained and securely archived for future use in research. Georgiana Thomas and [REDACTED] will have sole access to the link-anonymised data and the record of participant coding.

Involvement of the General Practitioner (GP)

One of these questionnaires may indicate that you are feeling particularly low, or that you have had thoughts about hurting yourself. If you are concerned about your low mood we would advise you to inform your GP (or other health care practitioner).

What will happen to the results of the research study?

Results of the research may be published in a scientific journal. You will not be identified in any report/publication. A summary of research findings will be made available to you upon completion of the project.

Who is organising and funding the research?

This research has been organised and funded by Canterbury Christ Church University.

Who has reviewed the study?

All research in the NHS is looked at by independent group of people, called a Research Ethics Committee, to protect your interests. This study has been reviewed and given favourable opinion by the Cambridge East Research Ethics Committee.

Further information and contact details:

If you would like to speak to me and find out more about the study or have questions about it answered, you can leave a message for me on a 24-hour voicemail phone line at [REDACTED]. Please say leave a message and contact number.

Thank you

Appendix K. Participant Consent Form

Centre Number:

Participant Identification Number for this study:

CONSENT FORM

Attention Deficit Hyperactivity Disorder (ADHD) and Parent Attachment

Name of Researcher: Georgiana Thomas

Please initial box:

- | | |
|--|--------------------------|
| 1. I confirm that I have read and understand the information sheet for the above study. | <input type="checkbox"/> |
| 2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my medical care or legal rights being affected. | <input type="checkbox"/> |
| 3. I understand that relevant data collected during the study may be looked at by the lead supervisor [Georgiana Thomas]. I give permission for these individuals to have access to my data. | <input type="checkbox"/> |
| <hr/> | |
| 4. I agree to take part in the above study. | <input type="checkbox"/> |

Name of Participant _____ Date _____

Signature _____

Name of Child _____ (print)

Date _____

Please sign and return this form as soon as possible. Thank You.

Appendix L. Letter of ethical approval from NHS Ethics Committee (partial)

This has been removed from the electronic copy.

Appendix M. Letter of NHS Research & Development Permission for Research

This has been removed from the electronic copy.

Appendix N. Summary report to be submitted to research ethics committee and R&D department on completion of the study

Background: Attachment is a physiological, emotional and cognitive system, which develops in the context of interactions with primary caregivers in the first years of life. Deficits in emotion regulation, inhibition and attention are features of ADHD, one of the most common child psychiatric diagnoses in the world. Current theoretical understanding of ADHD is that it is a genetic neurobiological disorder, however there is lack of consensus around its aetiology and the best course of treatment. It has been suggested that behaviour associated with ADHD may be attachment-related arising in the context of inconsistent or unresponsive care-giving. And children with ADHD have been found to have insecure attachments compared to controls. Parenting is an expression of adult's attachment style, based on their own early experiences of care-giving, yet there is a paucity of research exploring the relationship between adult attachment styles and symptoms of ADHD in their children.

Aim: The present study aimed to explore associations between adult attachment and child ADHD in a clinical and non-clinical sample using measures of adult attachment and parent-reported ADHD symptoms.

Design: The study incorporated between-groups and correlational components with regression techniques.

Method: Participants with children with an ADHD diagnosis ($n = 13$) and normal controls ($n = 43$) whose children were matched for age, were assessed on measures of adult attachment, mood and parent-reported child ADHD symptoms.

Results: There were no significant differences between parents in the ADHD and Non-ADHD group on measures of attachment. However, in the combined sample, parent dual/disorganised attachment was significantly associated with higher parent-reported child aggression, and was associated with child hyperactivity, but just short of statistical significance ($p < 0.056$). There was also an association between parent avoidant AS and child hyperactivity, which fell just short of statistical significance. There were no significant associations between attachment and inattention. The study concluded that parental insecure attachment, specifically either dual/disorganised or avoidant style, contributes to increased risk of child aggression and hyperactivity.

Appendix O. SAGE UK style guide, adopted by Clinical Child Psychology and Psychiatry.

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2. Article opening material

2.1 Headings

- 1. Headings should have an initial capital with everything else lowercase, unless proper names.
- 2. Italics can be included in A heads (H1) if needed, e.g. mathematical symbol or genus name.
- 3. Headings are unnumbered and formatted as below.
- 4. Where headings are referred to in the text use section names, as headings are not numbered.

A head (H1) (bold with initial cap, all the rest lowercase)

B head (H2) (italic with initial cap, all the rest lowercase)

C head (H3) (same as B head, but set as first line of paragraph, full out; italic with initial cap, all the rest lowercase, followed by a full stop. Following text runs on)

Headings for Abstract, Keywords, Funding, Acknowledgements, Conflict of interest (in that order), References, Appendices are same as A head but smaller font size

(CEs: where a template is being used there is no need to format these. Where no template is being used, please format as bold/italic, but there is no need to mark the font sizes, TS will format.)

2.2 Article types

Where a journal displays article types, these should appear on the first page of each article, left aligned above the horizontal rule, and in italics.

General technical or research papers should be classified as *Original Article* (with uppercase initial caps) for STM, and *Article* for HSS. (Check with the PE, as there is some variation between journals.)

Other usual paper types are as follows: *Review Article*, *Case Study*, *Technical Note*, *Case Report*. Individual journals may also have other paper types, as agreed with the Editor. Where no particular convention has been agreed, *Original Article* should be followed for STM, and *Article* for HSS.

2.3 Article title

Please format with an initial capital only and remaining words lower case, unless proper names. Italics can be included where necessary (e.g. genus name). Run on subtitle after colon, with initial capital after colon.

2.4 Author names, affiliations, and corresponding address

Authors

List authors in the order that they appear on the manuscript. Authors' first name should be in full, middle names should be initials *without* full stops (e.g. Simon PS Sharma) and no spaces between multiple initials. No series comma before the 'and' before the final author name.

Affiliations

Affiliations should contain only the following: department *or* faculty, institution, country. Some HSS journals may have institution and country only. Do not include titles, positions, qualifications, street names, or postcodes/zip codes. Affiliations should *not* end in a full stop. STM: author names should be annotated with superscripted numbers (CE: do not use automated endnotes against names and affiliations). If all authors are at the same affiliation no superscript numerals are required. Affiliations appear separately with the corresponding address at the bottom of the right column (see next page):

HSS: affiliations should directly follow each author name, as follows:

Mark A Creager¹, Reena L Pande¹ and William R Hiatt^{2,3}

Mark A Creager

(Department of Engineering,) Southampton University, UK

Reena L Pande

(Department of Engineering,) Southampton University, UK

William R Hiatt

County Hospital, CA, USA; Harvard Medical School, USA

Multiple affiliations are separated by a semi-colon.

Corresponding author

The affiliations and corresponding author information is positioned as follows:

Bottom of the right column on the first page of each paper, separated from the text with a horizontal rule (some exceptions apply for specific journals).

STM: Affiliations and corresponding author details should appear as follows, bottom of right column. HSS: corresponding author appears in the same position, minus the affiliations.

Please remove any fax or telephone numbers, titles (e.g. Dr, Professor), positions (e.g. Senior Lecturer).

Corresponding author:

John Smith, Department of Social Studies, South Bank University, 4 Sample Road, London SE17 9OP, UK Email: john.smith@sbu.ac.uk

Please note: 'Email' with cap E and without hyphen. Email should start a new line. There *should* be a full stop after the country in the corresponding address.

Affiliations and corresponding address text should be left aligned, not justified, to avoid irregular spacing between words.

2.5 Abstract and keywords

Abstract should appear in bold without a colon, text should start on the next line, with no indent.

Keywords (all one word) should appear in bold without a colon. The keywords should start on the next line, separated by commas only, not semi-colons. The first keyword should have an initial cap.

In some journals, Abstracts have sub-headings, e.g. Methods, Conclusion etc. These should be formatted in bold with a colon in bold and each sub-heading should start a new paragraph. The text should run on after each heading with an initial capital.

Submitted/accepted dates

For journals that publish received/revised/accepted dates (applies to specific journals, if unsure please check with the PE), this should appear after the Keywords and be formatted thus:

Date received 29 July 2010; reviewed 30 August 2010; accepted 5 November 2010

2.6 Running heads

Recto: should be author surname(s), e.g. *Smith*, or *Smith and Jones*, or *Smith et al.* (for three or more authors, and et al. is also in italic).

Verso: full journal title in italic, followed by 0(0).

For IMechE journals: e.g. *J. Automobile Engineering* 0(0), without the Proc. IMechE or journal letter).

3. General style and layout

3.1 Logo and imprint box

All papers in the standard SAGE design will have a journal logo in the top right with an imprint box underneath (although the logo may be missing on journals that are new to the SAGE design). The imprint box will contain the following information: journal name, vol/issue/page numbers (for papers in production, vol/issue are represented by 0(0), page numbers are the number of pages in the PDF, e.g. 1–9), copyright line, link to permissions web page, DOI, journal URL, SAGE logo:

3.2 Figures

1. STM: All figures should have a key line (i.e. be enclosed in a box). HSS: figures have no key line.
2. Figures should be appropriately sized (done by the TS). They do not need to be a full column width or page width.
3. Figure permissions: any figures reproduced from another publication need permission. In cases where those publishers listed on the STM permission Guidelines page (<http://www.stm- assoc.org/permissions-guidelines/>), permission is not required and only the reference number need be present in the caption. Some publishers ask for certain text, e.g. Elsevier.
4. Source: in cases where permission is required and has been obtained, this should appear below the caption in the following form: Source: reproduced with permission from publisher, year, reference number (Vancouver), author, date (Harvard).
5. Any abbreviations needing to be spelled out should be listed after the caption, starting on the next line, in the following format: IC: internal combustion; PID: proportional–integral–derivative).
6. Captions are positioned below the figures and left aligned.
7. Captions should start, for example, **Figure 1.** (with a full point also in bold) and have a full point at the end. Where the text runs onto multiple lines, the captions need not be justified but should be aligned left.
8. Where figures have multiple parts, these should be labelled as (a), (b), (c), etc. (not A, B, C). Captions should contain subheadings for all parts if not present in the figure itself.
9. All figures should be numbered consecutively and cited in the text as Figure 1, Figure 2 etc. (Figure should be spelled out in full, not abbreviated).
10. Text citations: figures should be referenced in the text as follows: Figure 1, or Figures 1 and 2, or Figures 2 to 4, or Figure 1(a) and (b), or Figure 2(a) to (c). Where the figure citation is not part of the sentence it should be placed in parentheses.

3.3 Tables

1. Tables do not need to be a full column width or page width, but should be the appropriate width for the content. They will be laid out by the TS so no work is required by CEs on table layout, only on content.

2. Table headings should be left aligned, even when they relate to multiple columns, unless this creates confusion.

Examples:

Please see Figure 2 for an illustration of the model used

The model used was an X3G standard type, exported from Germany (Figure 2 or see Figure 2).

3. Tables should only have minimal horizontal rules for clarity, and no vertical rules (done by TS, no need for CE to format).
4. All tables should be numbered consecutively and cited in the text as Table 1, Table 2 etc. (Table should be spelled out in full, not abbreviated).
5. Table permissions: any tables reproduced from another publication need permission. In cases where those publishers listed on the STM permission Guidelines page ([http://www.stm- assoc.org/permissions-guidelines/](http://www.stm-assoc.org/permissions-guidelines/)), permission is not required and only the reference number need be present in the caption. Some publishers ask for certain text, e.g. Elsevier.
6. Source: in cases where permission is required and has been obtained, this should appear below the table in the following form: Source: reproduced with permission from publisher, year, reference number (Vancouver), author, date (Harvard).
7. Any abbreviations needing to be spelled out should be listed under the table (smaller font, TS will format), in the following format: IC: internal combustion; PID: proportional–integral–derivative.
8. General notes to the Table should be positioned below the Table, typeset in a smaller font and should start 'Note:', and end in a full stop. Do *not* add the word 'Note:' unless needed for clarity.
9. Footnotes should be represented in the table by superscript letters ^a, ^b, ^c, etc., and appear below the Table (smaller font, TS will format). Each footnote should start a new line and end with a full stop. These notes should precede the source for the table, if included.
10. Captions are positioned above the table and left aligned.
11. Captions should start, for example, **Table 1.** (with a full point also in bold) and have a full point at the end. Where the text runs onto multiple lines, the captions need not be justified but aligned left.
12. Dates in Tables can be shortened to, for example, 4 Dec 10, if space is lacking. Do not use the form 04/12/10, as this could be confused as 12 April in US.
13. Normal text in columns should always be left aligned. Data in tables should be aligned on units if all the data in that column take the same units. Otherwise, the data should be left aligned. Units in table headings should be enclosed by parentheses, not square brackets (if any brackets are required at all).

3.4 Lists

1. For lists where items are not full sentences, use (a), (b), (c) etc. or bullet points (whichever is more appropriate) and separate items with semi-colons. Start list with a preceding colon and end list with a full stop.
2. For lists where items are full sentences or multiple sentences, use 1. 2. 3. Start list with a preceding full stop or semi-colon (whichever is more appropriate), and end list with a full stop.
3. List numbering/bullets should be full out and left aligned, with text indented and aligned. Lists should be separated from preceding/following text with a line space.
4. Where list items include headings, that heading should be italic, same size as text and end in a full stop. The following text should run on.

3.5 Maths/equations (see section 5, p. 14 for more details)

1. Equations should be left aligned with a 3 mm indent, *not* centred.
2. Equations can be broken at operator symbols (x, -, +, etc.), and continue on the next line, starting with the operator itself.
3. Equations should be separated from text above and below by at least one line space.
4. Any equation numbers should be enclosed in parentheses and right aligned, and aligned

horizontally with the bottom line of the equation or equations, where multiple terms are covered by one equation number. (Not all equations need be numbered, see section 5).

General note: text following Figures, Tables, equations does not need to be full out with no indent. If the next block of text after any of these items is a new paragraph, then this may be indented.

3.6 Appendices Maths notation list

1. Where present, notation should appear as Appendix 1, following the references. The heading *Notation* should be a B-head (not Notations; it is not plural).
2. Abbreviations list should be separated from mathematical notation under a separate B-head

Abbreviations.

3. Notation should be listed in alphabetical order, English letters first, followed by Greek, followed by numbers, followed by symbols.
4. Subscripts and superscript should come under a separate C-head (italic and smaller font), and symbols should follow the same order as in point 2 above.
5. The Notation section does not need to be cited in the text, like other Appendices.
6. Notation list should be left aligned. Text in the notation section should be left aligned in general, not justified.
7. Please note that a notation list is not compulsory in mathematical papers, as long as all symbols are defined in the text.

Other appendices

1. Numbering of figures/tables/equations in Appendices should follow on from the numbering in the text.
2. All tables/figures should have captions.
3. All appendices should be cited in the text, e.g. (see Appendix 1). If they are not cited, authors need to be queried for a citation position.

3.7 Notes and footnotes

Textual notes

HSS

References: Vancouver style reference citations are represented as textual notes, as a numeral enclosed in a square bracket. Harvard style references are as follows (Smith, 1999). Any other textual notes: are indicated by a superscript Arabic numeral placed *after* the punctuation. All textual notes should be collected and placed after the text and before the reference section with the heading **Notes**.

STM

References: Vancouver style reference citations are represented as textual notes, as a superscript Arabic numeral. Harvard style references are as follows (Smith, 1999). Any other textual notes (whether references are Harvard or Vancouver) are indicated by a superscript Arabic letter and the corresponding footnote appears at the bottom of the relevant column.

In STM journals, footnotes should be edited into the text if appropriately and easily incorporated. However, please leave footnotes if this is not possible.

Authors' biographical notes

These should appear at the end of the paper with the heading **Author biography** (or **biographies**), in same font size as References/Funding etc. heading. Follow journal style.

3.8 Book reviews

Please check that the book details are given in this format at the top of each review.

Author, *title*, publisher: place, date of publication; 000 pp.: ISBN, price (hbk), ISBN, price (pbk)

Editor(s) (ed[s].), *title*, publisher: place, date of publication; 000 pp.: ISBN, price (hbk), ISBN, price (pbk)

4. Spelling, punctuation and formatting

4.1 Author style/voice

We will endeavour to keep the author's voice as much as possible:

1. Some authors write in the first person. CEs please note that we will *not* be taking articles out of the

- first person into the third person.
- Where American authors have used American spellings, we should also endeavour to keep the author's grammar/punctuation, e.g. closed em-dashes instead of spaced en-dashes, single quotation marks within double, series comma etc.
 - Where UK authors have used –ise spellings throughout their papers in a consistent fashion, please do not change. Where there is inconsistency, use -ize.

4.2 General spelling rules

The general rules are as follows:

- UK spellings should be followed for European articles (-ise is acceptable)
- US spellings should be followed for North American articles
- Rest of the world – follow author style but make it consistent
- Canadian spellings should be standardized to UK or US, depending on author preference
- The following list shows some common exceptions to the '-ize' rule:
Note also: analyse (for UK), catalyse, dialyse, paralyse.
Follow author style regarding use of the possessive's for proper names ending in s. However, 's is not used for classical names, e.g. Socrates' philosophy.
The following books are recommended: *Hart's Rules*; *Fowler's Modern Usage*.

4.3 Punctuation and formatting Commas

- Follow author style but make consistent
- Oxford or series comma are not generally used; only use an Oxford/series comma if essential for clarity

Parentheses

These can be used throughout. Double sets of parentheses are acceptable, e.g. (see Figure 2(a)). Do not use square brackets in the text, except in the following circumstances.

Square brackets are used only to enclose an author's comment within a quote, e.g. [sic], [emphasis added]. Square brackets are also used for equations and mathematical expressions within the text.

Quotes

Use single quotes, with double quotes within quoted material. (See section 4.1 for exceptions for articles written by US authors.)

Samples							
advertise	arise	devise	enfranchise	expertise	merchandise	promise	surmise
advise	chastise	disenfranchise	enterprise	franchise	misadvise	reprise	surprise
affranchise	circumcise	disguise	exercise	improvise	premise	revise	televise
apprise	comprise	emprise	excise	incise	prise	supervise	treatise
Do not mix English and US spellings. Some common US variations in spelling:							
analyze	color	favor	fulfill	labor	license (noun)	program	traveler/traveling
behavior	counseling	fetus	gray	mold	pediatrics	practice (verb)	willful

Hyphenation

The basic rule is to follow author style but be consistent.

Use of upper and lower case

Check the author's usage first, and make consistent. For specific titles use initial caps, for generic titles use lower case (useful pointers follow):

Institutions, movements, denominations, political parties:

- the Roman Catholic Church
- he has catholic tastes
- They were Bolsheviks
- bolshevism, communism

Titles, ranks:

- the President (referring to a particular one)
- the Spanish Foreign Minister

- a president
 - several government ministers
- Geographical names:*
Capitalize politically defined or geographically named places, use lower case in all other instances.
- the West, the East
 - western values, eastern culture
 - South Africa
 - the south of Scotland
- Periods, events:*
- Second World War
 - rationing during the war
- Article and book titles:*
Follow the style used in the references.

Roman and italic usage

- Anglicized words should be roman with no accents (common examples follow):
- Words in other languages – follow author style and make consistent.
- Keep author's own emphasized words or phrases (in italic), unless excessive.
- General: usual italic rules applies, e.g. genus, species, relevant mathematical symbols, *x*-axis, *y*-axis, journal/book/magazine names, etc.

Quoted text

Spellings and punctuation in quoted texts should not be altered. If they are obviously incorrect, query with author or insert [sic].

Undisplayed quotes:

Short quotations should be indicated by single quotation marks, with double quotation marks for quotation material within the quote. A full point (or other punctuation) follows the reference for the quote, e.g. '... is the most decisive and important' (Smith, 2003).

Displayed quotes:

Lengthy quotes (40 words or more) should be displayed and indented, with a line space above and below, separating it from the text – follow journal style. Font size will be smaller (TS to format).

<i>Samples</i>			
ad hoc	coup d'etat	laissez faire	post mortem
a priori	de facto	nouveau riche	raison d'être
a propos	elite	op. cit.	sine qua non
avant-garde	en masse	per annum	status quo
bona fide	en route	per capita	vice versa
bourgeois/bourgeoisie	et al.	per se	vis-a-vis
cafe	in situ	post hoc	

Money

For currency use the common symbol or abbreviation: £, US\$, AUD\$, etc. – where the quantity is stated, but not when the unit of currency is being referred to in general terms, examples follow:

- The price of oil rose to US\$25 per barrel.
- The US dollar was at an all-time low.
- £150m, *not* millions or mlns.

Units in the text

1. Where units are referred to in the text in general terms, they should be written out in full.
2. Where a specific quantity is used, the abbreviated form of the unit must be used; e.g. the nails were several centimetres long; the nails were each 2 cm in length.
3. Always use numerals with the abbreviated unit and use abbreviated units wherever possible – in

lists of statistics, in tables and line artwork.

4. Numeral and units should be separated by a thin space, i.e. 100 km, not 100km (this does not need to be indicated by the CE, the TS will format, PR/PE to check). NOTE: exception to the thin space rule applies for percent and degree symbols, i.e. 90% and 35.7°
5. Abbreviations of units are the same for singular and plural (do not add an s); they do not take a full point. E.g. 25 min, 55 s
6. Use SI units wherever possible (see specific Journal webpages for more specific notes).

Numbers

1. Spell out numbers one to nine; for numbers 10 and over use numerals, except at the beginning of a sentence. Re-work the sentence if necessary.
2. Use numerals with percentages (use the % symbol, not per cent or percent), with units, in statistical passages, in tables, etc.
3. Spell out and hyphenate one-half, two-thirds, etc.
4. Do not use a comma in 4-digit numbers (thousands) but do use one in 5-digit numbers (tens of thousands) and above, e.g. 5643; 1298; 14,600; 342,885; 1,000,001. Do *not* use a thin space.
5. Do not contract number ranges, e.g. page ranges and dates; i.e. use pp. 24–29, 13–15 October, 1981–1999 etc.
6. Decimal points are never raised off the line.
7. Do not mix spelled-out numerals and units: 6 cm not six cm.

Dates

1. Write out dates in text and refs as follows: 30 September 2003, except in Tables if space is short, then a shortened version may be used, e.g. 11 Sep 08 (do not use 11/9/08, as this could be confused in the US as 9th November).
2. Do not use an inverted comma in decades, e.g. 1960s, mid-1930s. Avoid 80s, etc.
3. Use numerals for centuries (except in history journals where it is spelled out), e.g. a 21st-century dilemma.

4.4 Abbreviations General

1. Do not use abbreviations in the title of a paper, in the abstract, or keywords, unless the full version is very long and clumsy or the abbreviation is better known than the full term (e.g. DNA). Abbreviations may be used in headings and subheadings if they have already been defined previously in the paper at first usage. If in doubt, spell out.
2. Define an abbreviation the first time that it is used (except in the Abstract): write the term out in full followed by the abbreviation in parentheses. Use the abbreviation consistently thereafter, including at the start of sentences.
3. For plural terms, use plural abbreviations, e.g. low-density lipoprotein, LDL; low-density lipoproteins, LDLs.
4. If you need to abbreviate months or days of the week (for example, in a crowded table), use the first three letters without a full-stop (Mon, Tue; Jan, Feb).
5. If abbreviations are used in a figure or table, they must all be defined in the caption or in a Table note/footnote even if they are also defined in the text.
6. Do not use abbreviations invented by the author of a paper for that paper – ideally, only conventional, generally accepted abbreviations should be used.
7. Do not abbreviate single words (exceptions apply) or use two-letter abbreviations other than those listed below. (Two-letter engineering abbreviations are available in the IMechE Style Guide supplement).
8. Abbreviations consisting of capital letters, and acronyms and contractions, should not take full points, e.g. USA, UK, MA, UN, WHO, PhD, NATO (or Nato), UNESCO (or Unesco), AD, BC
9. Unfamiliar (but generally accepted) abbreviations should always be written out in full when first mentioned, with the abbreviated form following in parentheses, e.g. “The

Confederación Española de Derechas Autónomas (CEDA) was formed". Thereafter use the abbreviation.

10. Contractions do *not* take a full point, e.g. Mr, St, Ltd, edn, Dr, neither do contracting degrees (Dr, DPhil, PhD, MSc). The following abbreviations take full points: no., Co., p., pp., vol., ch. (but use vols and chs), e.g., ed. (but use eds), et al., etc., i.e., cf., (note that this means 'compare' and not 'see'), n.d.
11. No comma after e.g., i.e. or cf. Etc. has a full stop and is usually preceded by a comma in a list. They may be used in lists or figure or table legends, and within parentheses.
12. In reference lists, notes, footnotes, corresponding author address (if required) and authors' biographical notes, please use the standard abbreviated form for American states (and Canadian/Australian territories). Please spell out in full in the text (see section 7.3 for full list of US state abbreviations).

Some journals use abbreviations that do not need to be spelled out, even at first usage. For a full list of abbreviations that do not need to be spelled out for each individual journal, please visit the journal webpage.

STM abbreviations: some abbreviations of terms that we do not define in full are listed here (follow style given):

- SD = standard deviation
- SEM = standard error of the mean
- NS = not significant
- a.m. in the morning (but use 24-hour clock if possible)
- p.m. in the afternoon
- N/A = not applicable
- Chemical symbols (H O, H SO) may be used without definition. However, write in full unless this is 224 inappropriate (e.g. 'Water consists of hydrogen and oxygen'; 'Nitric oxide is also found in peripheral nerves'). Refer to *Scientific terminology* notes for further guidance.
See the Appendix (pp. 26 and 27) for a full list of accepted general two-letter STM abbreviations and engineering abbreviations.

5. Technical content: maths, equations, etc.

5.1 Maths notation convention

There is no specific convention for mathematical notation in terms of matrices, vectors, variables, operators, functions, subscripts, superscripts and scalars. CE please follow the author's symbols and notation conventions, ensuring that these are consistent throughout the paper.

Please query the author if any symbols are unclear, duplicated with more than one definition, or undefined.

5.2 Equations Layout of equations

1. Equations should be left aligned on a 3 mm indent, *not* centred.
2. Equations should be numbered in sequence throughout the text, with the numbering continuing through all appendices. However, equations only need to be numbered if cited in the text, and not all equations necessarily need to be numbered.
3. Equation numbers should be set flush right and in sequence. Each numbered equation should have its own line.
4. No punctuation is used before or after an equation (i.e. no commas, colons, hyphens etc.)
5. The equation number should align with the *bottom line of equation*. Where the equation number covers multiple equations, it should align with the bottom line of the last equation.
6. When referred to in text, equations take the form 'equation (1)'. When a range of equation numbers is referred to, use the form: equations (1) and (2); equations (1) to (3); equations, (1), (2), and (5) to (7).

7. If two or more small equations or conditions can fit on one line, then they should be well separated with a 2-em space. Commas and words, set upright not italic, may be used to enhance clarity.
8. Equations in text must be reduced to one line depth. Display equations are built up to two line depth. For instance, the equation $(x - y)/(x^2 + 2y - 3)$ runs on in the text but for display becomes

$$x - y \quad x^2 + 2y - 3$$
9. CEs: Spaces between + and – and other operators need not be marked. TS will format.
10. Unless separating small equations and conditions, as shown above, odd words between equations such as ‘where’, ‘and’, ‘thus’, ‘therefore’ should be on a separate line from the equations and flush left. Only use initial capitals for these if they start a new sentence.
11. When a single equation has been presented with a label/header (e.g. ‘momentum conservation equation’, ‘blade element momentum theory’, etc.), present the label before the equation, full left, half-line above, and in roman.
12. Where an equation is too long to fit on one line, take over whole terms starting if possible with a + or – or = symbol, and indent.
13. Where a bracketed term has to be split over lines move the second part to the right to show it is still part of the same term (align to the right of the bracket).
14. Pairs of opening and closing brackets should be the same size, even when they are on different lines.
15. Where an equation breaks at an equals sign indent a further em in from the first line.
16. Where equations are split over 2 lines, the break should occur before the operator:

5.3 Units

SI preferred. Expressions such as rpm, psi, cfm, gpm, mph, kph, tsi, revs should be avoided.

Use instead r/min, lbf/in², gal/min, mile/h, km/h, ton/in², rotational speed, etc.

Notes: Greek μ in μm should always be roman; MPa and GPa should always have a capital P.

5.4 Symbols and operators

A thin non-breaking space should separate symbols and operators from numerals, and be present either side of multiplication dots and all operators, e.g. +, –, =, x, <, >, etc. (this does not need to be indicated by the CE, the TS will format)

Appendices and notation (see section 2.6, p. 7)

6. Appendices

6.1 General STM acceptable 2-letter abbreviations (should be defined on first mention):

AH	arterial hypertension	ML	maximum lysis
AP	anteroposterior	MR	magnetic resonance
AR	androgen-receptor	MS	multiple sclerosis
AS	ankylosing spondylitis	ND	no data
AT	anti-thrombin	NF	nuclear factor
BP	blood pressure	NK	natural killer
CE	centre–edge	OD	optical density
CF	cystic fibrosis	OR	odds ratio
CI	cardiac index	OS	overall survival
CI	confidence interval	PC	protein C
CO	cardiac output	PD	potential difference
CP	cerebral palsy	PD	progressive disease
CR	complete response	PE	probable error

CT	clotting time	PP	pulse pressure
CT	computed tomography	PR	partial response
ED	emergency department	PT	prothrombin time
ED50	median effective dose	RA	rheumatoid arthritis
EU	European Union	RA	right atrium
FA	fatty acid	Rh	rhesus
FA	folinic acid	RQ	respiratory quotient
FR	fixed ratio	RR	relative risk
GH	growth hormone	RR	response rates
GM	genetically modified	RT	room temperature
GP	general practitioner	RV	right ventricle
Hb	haemoglobin	SE	standard error
HR	heart rate	SV	stroke volume
IR	infrared	TB	tuberculosis
LD50	median lethal dose	TC	total cholesterol
LH	luteinising hormone	TF	tissue factor
LV	left ventricle	TS	thymidylate synthase
mAb	monoclonal antibody	TT	thrombin time
ME	medial epicondyle	UV	ultraviolet
ME	myalgic encephalomyelitis	VD	venereal disease
MI	myocardial infarction		

6.2 Engineering acceptable 2-letter abbreviations (should be defined on first mention):

AC/DC	alternating current/direct current	HC	hydrocarbon
A/C	air conditioning	KF	Kalman filter
AI	artificial intelligence	MR	magnetorheological
AI	auto-ignition	MR	magnetic resonance
CA	crank angle (also used as a unit of measurement)	MS	mass spectrometry
CC	combustion chamber	MW	molecular weight
CG	centre of gravity	NN	neural network
CI	compression ignition	NS	Navier–Stokes
CM	centre of mass	PI	proportional–integral
CV	cyclic variability	PM	particulate matter
DI	direct injection	<i>Re</i>	Reynold’s number
EA	evolutionary algorithm	RF	radio frequency
EM	electromagnetic	RI	rollover index
EV	electric vehicle	SD	standard deviation
FE	finite element	SI	spark ignition
GA	genetic algorithm	TC	traction control
GT	gas turbine	UV	ultraviolet

Appendix P. Clinical Child Psychology and Psychiatry Manuscript Submission Guidelines (SAGE UK)

1. Article types
2. Peer review policy
3. How to submit your manuscript
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 - 4.1 Journal style
 - 4.2 Reference style
 - 4.3 Manuscript Preparation
 - 4.3.1 Preparation for blind peer review
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 - 4.3.5 Guidelines for submitting supplemental files
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Clinical Child Psychology and Psychiatry is a peer reviewed journal that brings together clinically oriented work of the highest distinction from an international and multidisciplinary perspective, offering comprehensive coverage of clinical and treatment issues across the range of treatment modalities.

Writing and submitting your manuscript

1. Article types

Clinical Child Psychology and Psychiatry is interested in advancing theory, practice and clinical research in the realm of child and adolescent psychology and psychiatry and related disciplines. Articles should not usually exceed 7,500 words and be clearly organized, with a clear hierarchy of headings and subheadings (3 weights maximum). Authors wishing to

submit an article longer than 7,500 words should discuss this in advance with the journal editor.

2. Peer review policy

The Editor will screen manuscripts for their overall fit with the aims and scope of the journal, especially in terms of having clear relevance for clinicians. Those that fit will be further reviewed by two or more independent reviewers in terms of merit, readability and interest.

3. How to submit your manuscript

All papers must be submitted via the online system. If you would like to discuss your paper prior to submission, please refer to the contact details below.

Before submitting your manuscript, please ensure you carefully read and adhere to all the guidelines and instructions to authors provided below. Authors will be asked to re-submit manuscripts that do not conform to these guidelines.

Clinical Child Psychology and Psychiatry is hosted on SAGE track a web based online submission and peer review system powered by ScholarOne Manuscripts. Please read the Manuscript Submission guidelines below, and then simply visit <http://mc.manuscriptcentral.com/ccpp> to login and submit your article online

IMPORTANT: Please check whether you already have an account in the system before trying to create a new one. If you have reviewed or authored for the journal in the past year it is likely that you will have had an account created. For further guidance on submitting your manuscript online please visit ScholarOne Online Help.

4. Manuscript style

4.1 File types

Only electronic files conforming to the journal's guidelines will be accepted. Word DOC is the preferred format for the text and tables of your manuscript. Please also refer to additional guideline on submitting artwork [and supplemental files] below.

4.2 Journal Style

Clinical Child Psychology and Psychiatry conforms to the SAGE house style. [Click here to review guidelines on SAGE UK House Style](#)

4.3 Reference Style

Clinical Child Psychology and Psychiatry adheres to the APA reference style. [Click here to review the guidelines on APA to ensure your manuscript conforms to this reference style.](#)

4.4 Manuscript Preparation

The text should be double-spaced throughout and with a minimum of 3cm for left and right hand margins and 5cm at head and foot. Text should be standard 10 or 12 point.

4.4.1 Preparation for blind peer review

Wherever possible, authorship should not be revealed or suggested in the manuscript, so as to allow for blind peer review. When citing an author's own work, insert (author citation withheld for peer review) in place of the citation. The citations can be added after a manuscript is accepted for publication .

4.4.2 Your Title, Keywords and Abstracts: Helping readers find your article online

The title, keywords and abstract are key to ensuring readers find your article online through online search engines such as Google. Please refer to the information and guidance on how best to title your article, write your abstract and select your keywords by visiting SAGE's Journal Author Gateway Guidelines on How to Help Readers Find Your Article Online.

4.4.3 Corresponding Author Contact details

Provide full contact details for the corresponding author including email, mailing address and telephone numbers. Academic affiliations are required for all co-authors. These details should be presented separately to the main text of the article to facilitate anonymous peer review.

4.4.4 Guidelines for submitting artwork, figures and other graphics

For guidance on the preparation of illustrations, pictures and graphs in electronic format, please visit SAGE's Manuscript Submission Guidelines.

Figures supplied in colour will appear in colour online regardless of whether or not these illustrations are reproduced in colour in the printed version. For specifically requested colour reproduction in print, you will receive information regarding the costs from SAGE after receipt of your accepted article.

Figures, tables, etc.: should be numbered consecutively, carry descriptive captions and be clearly cited in the text. Keep them separate from the text itself, but indicate an approximate location on the relevant text page. Line diagrams should be presented as camera-ready copy on glossy paper (b/w, unless to be reproduced - by arrangement - in colour) and, if possible, on disk as EPS files (all fonts embedded) or TIFF files, 800 dpi - b/w only. For scanning, photographs should preferably be submitted as clear, glossy, unmounted b/w prints with a good range of contrast or on disk as TIFF files, 300 dpi.

4.4.5 Guidelines for submitting supplemental files

Clinical Child Psychology and Psychiatry does not currently accept supplemental files.

4.4.6 English Language Editing services

Non-English speaking authors who would like to refine their use of language in their manuscripts might consider using a professional editing service. Visit English Language Editing Services for further information.

5. Ethical considerations

The following ethical considerations apply to research articles, including case studies.

5.1. Consent and confidentiality.

Disclosure should be kept to a minimum necessary to fulfill the objective of the article. All identifying details should be omitted. For both qualitative and quantitative studies, client or participant consent to participate should be obtained in accordance with ethics committee or institutional approval, and the study information sheets should include advice that the study findings may be published, and that no publications will reveal the identity of individual participants. For case studies, it is essential that the client provides written consent for their case to be published without them being identified, prior to a manuscript being submitted to Clinical Child Psychology and Psychiatry, with a statement to this effect

being included in the manuscript text. Any material that is particularly distinctive should be omitted or aggregated. In case reports where ensuring anonymity is impossible, written consent must be obtained from the clients described, or their legal representative, and submitted with the manuscript.

5.2. Ethics committee or institutional approval. The manuscript must include a statement that confirms that the study is approved by the relevant human ethics research committee, or has institutional approval. Alternatively, for case studies the manuscript must include a statement confirming the client has provided written consent for their case to be published.

6. Permissions

Authors are responsible for obtaining permission from copyright holders for reproducing any illustrations, tables, figures or lengthy quotations previously published elsewhere. For further information including guidance on fair dealing for criticism and review, please visit our Frequently Asked Questions on the SAGE Journal Author Gateway.

After manuscript is accepted for publication

After a manuscript is accepted for publication various information will need to be inserted that was previously withheld for blind review. Some of this information is referred to in sections below.

7. Journal contributor's publishing agreement

Before publication SAGE requires the author as the rights holder to sign a Journal Contributor's Publishing Agreement. For more information please visit our Frequently Asked Questions on the SAGE Journal Author Gateway.

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8. Declaration of conflicting interests

Within your Journal Contributor's Publishing Agreement you will be required to make a certification with respect to a declaration of conflicting interests. Clinical Child Psychology and Psychiatry does not require a declaration of conflicting interests but recommends you review the good practice guidelines on the SAGE Journal Author Gateway.

9. Acknowledgements

Any acknowledgements should appear first at the end of your article prior to your Declaration of Conflicting Interests (if applicable), any notes and your References.

All contributors who do not meet the criteria for authorship should be listed in an 'Acknowledgements' section. Examples of those who might be acknowledged include a person who provided purely technical help, writing assistance, or a department chair who provided only general support. Authors should disclose whether they had any writing assistance and identify the entity that paid for this assistance.

9.1 Funding Acknowledgement

To comply with the guidance for Research Funders, Authors and Publishers issued by the Research Information Network (RIN), Clinical Child Psychology and Psychiatry additionally requires all Authors to acknowledge their funding in a consistent fashion under a separate heading. Please visit our Funding Acknowledgement on the SAGE Journal Author Gateway for funding acknowledgement guidelines.

10. Production matters

10.1 Proofs

We will email a PDF of the proofs to the corresponding author.

10.2 E-Prints

SAGE provides authors with access to a PDF of their final article. For further information please visit <http://www.sagepub.co.uk/authors/journal/reprint.sp>.

10.3 SAGE Production

At SAGE we place an extremely strong emphasis on the highest production standards possible. We attach high importance to our quality service levels in copy-editing, typesetting, printing, and online publication (<http://online.sagepub.com/>). We also seek to uphold excellent author relations throughout the publication process.

We value your feedback to ensure we continue to improve our author service levels. On publication all corresponding authors will receive a brief survey questionnaire on your experience of publishing in Clinical Child Psychology and Psychiatry with SAGE.

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