

Concern about behaviours associated with Attention Deficit Hyperactivity Disorder (ADHD): the Influence of Gender

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Concern about behaviours associated with Attention Deficit Hyperactivity Disorder (ADHD): the Influence of Gender

Kate Horn

Abstract

Many more boys with ADHD are seen in clinical settings, at a ratio of approximately 9 boys to every girl. While it is recognised that girls genuinely present less frequently with symptoms of ADHD, epidemiological studies suggest that the ratio is closer to 4:1 in community samples. It is apparent that significant numbers of girls with ADHD do not receive professional help.

This study investigated the influence of a child's gender on a sample of female teachers' ($N = 46$) and mothers' ($N = 61$) ratings of concern about the inattentive, hyperactive, and impulsive behaviours associated with ADHD, and the oppositional behaviours that frequently co-occur. Participants rated their concern in response to the behaviour of a fictional 7-year-old child on the Horn Anxiety Rating Scale - a rating scale based on Conners' Rating Scale - Revised: Long version (CRS-R:L).

Teachers gave significantly higher ratings of concern in response to ADHD and oppositional behaviours for a fictional 7-year-old boy compared with those for a girl. No differences were found between mothers' ratings of concern for girls and boys.

The results are discussed in relation to previous research into the different ways in which boys and girls present with ADHD, and the effect that this might have on recognition and referral rates. The way in which the behaviours associated with ADHD are judged and rated, and possible differences in help-seeking behaviours in relation to boys and girls with ADHD are also addressed. The limitations of the study are discussed, and the implications of the findings are presented in terms of clinical practice, service design, and suggestions for future research.

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Introduction

1.1 Overview

In this chapter the concept of Attention Deficit Hyperactivity Disorder (ADHD) is introduced, with a description of the three core features of inattention, hyperactivity and impulsivity, and the key difficulties experienced by children with ADHD. The difference between the numbers of girls with ADHD found within clinical settings, and the number of girls showing symptoms of ADHD found in community samples, is discussed. The reasons for the low numbers of girls with ADHD seen in clinical settings is explored in relation to:

- the different ways in which ADHD presents itself in boys and girls and the effect that this might have on recognition and referral rates
- the way in which the behaviours associated with ADHD are judged, both in terms of the individual assessor and the gender of the child
- the possible differences in help-seeking behaviours in relation to boys and girls with ADHD.

Finally the rationale, research questions and hypotheses relating to the current study will be presented.

1.2 Attention Deficit Hyperactivity Disorder

1.2.1 Terminology

Attention Deficit Hyperactivity Disorder (ADHD) is the term used by the American classification system, produced by the American Psychiatric Association (APA). The most recent edition of the Diagnostic and Statistical Manual – Fourth Edition – Text Revision (DSM-IV-TR, APA, 2000) uses the term to describe children with problems of inattention, hyperactivity and impulsivity. The classification system used in Europe, the International Statistical Classification of Diseases and Related Health Problems: Tenth Edition (ICD-10), (World Health Organisation, 1992), uses the term Hyperkinetic Disorder, but the core features of ADHD and Hyperkinetic Disorder are very similar. Each adopts almost identical criteria for the identification of inattentive, hyperactive and impulsive symptoms (Schachar & Tannock, 2002).

The principal difference between the two classification systems is that the European ICD-10 states that *all* necessary diagnostic criteria be shown by an individual in two or more settings, *e.g.* home and school, whereas the North American DSM stipulates that *criteria* be met in at least one situation and that *impairment* arising from ADHD symptoms be

present in another. Thus the term Hyperkinetic Disorder has a more rigorous diagnostic criteria, so those diagnosed with Hyperkinetic Disorder are considered to represent a more severely affected sub-set within those children assessed as having ADHD (Thorley, 1998).

ADHD is currently the more widely used term (Carr, 1999) and the more common diagnosis (Taylor *et al.*, 1998), and is the term used throughout this study. Although it is recognised that the symptoms of ADHD and the associated secondary difficulties can persist into adulthood (APA, 2000), the current study focuses on the diagnosis of ADHD in childhood.

1.2.2 Core Characteristics of ADHD

In the DSM-IV-TR these are described as a “persistent pattern of inattention and/or hyperactivity-impulsivity that is more frequently displayed and more severe than is typically observed in an individual of comparable development” (APA, 2000, p. 85), (see Table 1. for full diagnostic criteria).

i. Inattention.

In the context of ADHD, inattention refers to an individual’s difficulty with *sustained* attention - the ability to keep paying attention over time - and *selective* attention - the ability to filter out additional, non-essential stimuli. Difficulty with sustained attention means that the child often shows an inability to focus on a task long enough to complete it, and frequently changes from one task to another. He or she often does not give close attention to detail, and consequently school or homework may appear to be carelessly done (APA, 2000). The inattentive child’s difficulty with selective attention means that he or she is easily distracted by noises or events that are easily ignored by others (Douglas, 1972).

ii. Hyperactivity.

Hyperactivity refers to excessive motor activity (Schachar & Tannock, 2002). This may manifest itself in fidgeting or the tapping of hands or feet, and an inability to remain seated. Such children have difficulty in engaging in quiet sedentary activities, and have a tendency to talk excessively (APA, 2000).

iii. Impulsivity.

Impulsivity refers to difficulty in delaying verbal or physical responses. Individuals showing high levels of impulsivity may respond to situations or engage in activities without considering the possible consequences. They may frequently interrupt or intrude on others and show high levels of impatience (APA, 2000).

Table 1. Diagnostic Criteria for Attention-Deficit/Hyperactivity Disorder, DSM-IV-TR, APA, 2000.

A. Either (1) or (2):

(1) Six (or more) of the following symptoms of inattention have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level:

- (a) often fails to give close attention to details or makes careless mistakes in schoolwork, play, or other activities
- (b) often has difficulty sustaining attention in tasks or play activities
- (c) often does not seem to listen when spoken to directly
- (d) often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behaviour or failure to understand instructions)
- (e) often has difficulty organising tasks and activities
- (f) often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework)
- (g) often loses things necessary for tasks or activities (*e.g.*, toys, school assignments, pencils, books, or tools)
- (h) is often easily distracted by extraneous stimuli
- (i) is often forgetful in daily activities

(2) Six (or more) of the following symptoms of hyperactivity-impulsivity have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level:

Hyperactivity

- (a) often fidgets with hands or feet or squirms in seat
- (b) often leaves seat in classroom or in other situations in which remaining seated is expected
- (c) often runs about or climbs excessively in situations in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings or restlessness)
- (d) often has difficulty playing or engaging in leisure activities quietly
- (e) is often "on the go" or often acts as if "driven by a motor"
- (f) often talks excessively

Impulsivity

- (g) often blurts out answers before questions have been completed
- (h) often has difficulty awaiting turn
- (i) often interrupts or intrudes on others (*e.g.*, butts into conversations or games)

B. Some hyperactive-impulsive or inattentive symptoms that caused impairment were present before age 7 years.

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

1.2.3 Difficulties Associated with ADHD

The difficulties of inattention, hyperactivity and inattention can have an impact on key areas in a child's life, including academic performance, family and peer relationships (APA, 2000). ADHD has frequently been linked to poor educational achievement (*e.g.* Frick *et al.*, 1991), which is not surprising considering the child's difficulty with concentration on single tasks, high levels of activity that make remaining seated and focussed difficult, and an inability to suppress initial responses which are intrusive or disruptive in a classroom setting.

The poor academic achievement of children, particularly due to the inattentive symptoms of ADHD, often leads to conflict with the family and with school authorities, and is frequently attributed to laziness or disobedience (APA, 2000). Johnston (1996), for example, found more parent-child conflict in the families of 5-11-year-old ADHD children than with families of nonproblem children.

Children with ADHD have also been found to have negative relationships with their peers, and have fewer friends than other children. These difficulties are of similar severity for boys and girls (*e.g.* Horn, Wagner & Ialongo, 1989), but the nature of the difficulties has been shown to differ. In a referred sample, boys with ADHD were more dominating and physically aggressive towards their peers, while girls with ADHD were found to suffer more peer aggression and rejection (Berry, Shaywitz and Shaywitz, 1985).

Longitudinal studies show that by late adolescence and early adulthood, children identified as having ADHD are at risk from a number of problems, which might lead to anti-social behaviours, cognitive difficulties, and lower occupational status (Taylor *et al.*, 1996; Fergusson, Lynskey & Harwood, 1997). The core and secondary problems associated with ADHD clearly have long term implications (Thorley, 1989). Schachar and Tannock (2002) comment that ADHD may increase the risk of a second disorder. School failure, for example, may result in gravitation toward delinquent peers or in demoralisation that develops into depression (Schachar & Tannock, 2002).

1.3 ADHD and Gender

The overall prevalence of ADHD has been estimated at between 3% and 7% in school-age children (APA, 2000), and research from the USA indicates that as many as 30-50% of referrals to child and adolescent mental health services (CAMHS) are specifically related to ADHD (Barkley, 1996). There has also been a rapid growth of awareness and recognition of ADHD in the UK (British Psychological Society, 1996), although the majority of research has been conducted in the USA. Where it is not stated, the studies reviewed are based on a USA sample.

Because much of the research to date has concentrated on boys with ADHD, and very little on girls, an impression is gained that the disorder is most common in boys. The behaviours used to define the symptoms of ADHD in DSM-IV were identified through research within a sample that was predominantly male (Lahey *et al.*, 1994). This confined sample could lead to a male dominated picture of the symptoms of ADHD. Subsequent researchers may then sample disproportionately large numbers of boys because they match this profile more readily (Hartung, 1998).

Male-to-female ratios have been estimated to be as high as 9:1 amongst clinically referred children (APA, 2000), and it had been assumed that fewer female referrals meant fewer affected females. However Berry *et al.* (1985) asked whether there were in fact fewer girls with ADHD, or whether they were not being recognised. Epidemiological studies, conducted in the USA, looking at large numbers of children between 4-16 years of age (Szatmari, Offord & Boyle, 1989), support this idea, estimating that, while there are more boys with ADHD than girls, the difference could be as low as 3:1. In a survey of the mental health of children and adolescents in Great Britain, although using the more rigorous diagnostic criteria of Hyperkinetic Disorder, Meltzer, Gatward, Goodman and Ford (2000) found comparable results, with a ratio of boys to girls of 4:1.

Given the difficulties associated with ADHD, the fact that a proportion of girls with ADHD appear not to be gaining access to services is important, and must be of significant concern to the services involved, as they are likely to involve many families (Arnold, 1996).

Research over the last decade has focused less on discovering the reasons why fewer girls than boys are *affected* by ADHD and more on the reasons why so few girls are *detected* and *referred* for treatment. The literature is presented and discussed in terms of:

- the different ways in which boys and girls present with ADHD,
- the ways in which ADHD behaviours are assessed,
- the effects of these differences on help-seeking behaviours.

1.4 Gender Differences in the Presentation of ADHD

1.4.1. ADHD Subtypes

The main characteristics of inattention, hyperactivity and impulsivity are not necessarily displayed equally by any individual child (Graham, 1998), and the DSM-IV-TR differentiates between three subtypes:

- a) ADHD, Combined type - those who present with inattention *and* hyperactivity and impulsivity
- b) ADHD, Predominantly Inattentive type
- c) ADHD, Predominantly Hyperactive-impulsive type (APA, 2000).

The ADHD subtype that they typically express might influence the disparity between the numbers of girls and boys receiving treatment for ADHD. Girls have been found to display mainly inattentive symptoms, and Lahey *et al.* (1994) found that girls are twice as likely to be diagnosed with ADHD, Predominantly Inattentive, than any other subtype. This is supported by Biederman *et al.* (1999) who found that a sample of 140 clinically referred girls diagnosed with ADHD showed more inattentive symptoms than hyperactive or impulsive symptoms, according to ratings made by parents and by the child themselves.

The expression of each of these different subtypes can have an effect on the way in which a child's difficulties are identified and described. It may be more likely, for example, that girls presenting with the Predominantly Inattentive subtype will have their difficulties attributed to learning difficulties or to depression. Broitman (2001) observes that girls may be more likely to be diagnosed with depression than boys because of the subtype they express.

The expression of the other two subtypes – ADHD, Predominantly Hyperactive-impulsive and ADHD, Combined type – is more demonstrative and disruptive, typified by a pattern of behaviours known as *externalising* behaviours. The results of meta-analytic reviews,

using teacher and parent ratings of both nonreferred and clinic-referred children with ADHD, have found that boys tend to display more *externalising* behaviours, such as disruptive, and hyperactive behaviours, than females (Gaub & Carlson, 1997), who tend to display more *internalising* behaviours, such as anxiety, and depression (Gershon, 2002). However, it is not clear to what extent these differences are based on actual observable differences or gender-specific biases and expectations (Abikoff *et al.*, 2002). Gaub and Carlson's (1997) meta-analysis, for example, found that some gender differences were clearly moderated by sample effects. Among children with ADHD identified from non-referred populations, girls with ADHD displayed lower levels of inattention, less internalising behaviour and less peer aggression than boys with ADHD. However, girls and boys with ADHD identified from clinic-referred samples did not differ in level of impairment on these variables.

Abikoff *et al.* (2002) attempted to control for the influence of sample effects and possible rater bias, by conducting classroom observations of over 500 children with ADHD, 103 of whom were girls. They found that, compared to girls with ADHD, boys with ADHD had higher rates of aggression, disruption, rule breaking and other externalising behaviours. They did not find a difference between boys and girls with ADHD on measures of inattention, *e.g.* being off-task, or fidgeting.

These observed differences in behavioural patterns suggest that real sex differences in externalising behaviours could play a role in the different patterns of identification and referral of boys and girls with ADHD as boys may be more likely to be referred because they present with a greater rate of disruptive, externalising behaviour (Gaub & Carlson, 1997). Pavuluri, Luk and McGee (1996) found that help was sought more commonly for those pre-school children showing high levels of externalising behaviour problems. ADHD clinics typically receive a higher number of referrals for ADHD boys due to the greater likelihood of disruption in settings such as school (Gershon, 2002). Girls with Predominately Inattentive ADHD may be more easily missed or ignored than boys, who typically display more externalising behaviours associated with the Predominately Hyperactive-Impulsive or Combined subtypes (Gaub & Carlson, 1997).

1.4.2 Comorbidity.

Gender differences in externalising and internalising patterns of behaviour, however, might reflect differences in patterns of comorbidity in girls and boys with ADHD. The term 'comorbidity' refers to the co-existence of two or more different difficulties in the same child. Approximately half of all children with ADHD, within a clinically referred sample, also have Oppositional Defiant Disorder or Conduct Disorder (APA, 2000). Oppositional Defiant Disorder is characterised by a pattern of negative, defiant and hostile behaviour. Conduct Disorder is a more severe disorder characterised by acting-out, aggressive, and disruptive behaviour that involves violation of the rights of others. Both are characterised by defiant, aggressive behaviour patterns (Barkley, 1990).

A study examining the prevalence of mental health problems among young people aged 5-15 in Great Britain, found that, overall, the prevalence of conduct disorders was approximately twice as common among boys than girls (Meltzer *et al.*, 2000). Equally, the co-occurrence of oppositional and conduct disorders with ADHD is more common in the case of boys (APA, 2000). The co-occurrence of oppositional or conduct disorder with ADHD is more likely when a child is displaying one of the two subtypes marked by hyperactivity and impulsivity, namely ADHD, Combined Type and ADHD, Predominantly Hyperactive-Impulsive Type, and these are the subtypes typically shown by boys (APA, 2000). The meta-analysis of 18 ADHD research projects, conducted by Gaub and Carlson (1997) suggested that clinically referred girls with ADHD tend to have lower rates of comorbid Conduct Disorder than boys. Biederman *et al.* (1999) found that, although clinically-referred girls with ADHD ($N = 140$) had significantly higher rates of comorbid disruptive behaviour than non-ADHD control girls ($N = 122$), the prevalence of both conduct disorder and oppositional defiance disorder were half of those previously reported in boys with ADHD (Biederman, Newcorn & Sprich, 1991).

The higher numbers of males seen in clinical samples could be influenced by the fact that boys are more likely to present with co-morbid Conduct Disorder or Oppositional Defiant Disorder and it is these difficulties that prompt referral. It has been found that individuals with more than one disorder are more likely to be referred to services (Schachar & Tannock, 2002), and Garralda and Bailey (1988) found that referral rates were linked with antisocial behaviour. The oppositional and conduct difficulties occurring alongside ADHD, in the case of many boys, may increase the likelihood of detection and assessment. They have also been found to bias the perception of ADHD behaviours.

1.4.2.1 Halo Effects.

These effects refer to the influence that one type of behaviour can have on an individual's perception of another type of behaviour (Guilford, 1954). The occurrence of oppositional and conduct behaviours alongside inattentive, hyperactive and impulsive behaviours, has been shown to influence the perceptions of adults about each type of behaviour, both in terms of the perceived *frequency* and the perceived *severity* of the behaviour (Jackson & King, 2004). The impact of one type of behaviour on the perception of another is described in terms of 'halo effect'. Halo effects can be *positive*, with the occurrence of one behaviour *decreasing* an individual's perception of the presence of another type of behaviour, or *negative*, with the occurrence of a behaviour *increasing* an individual's perception of the presence of another (Jackson & King, 2004).

Negative halo effects have been observed when teachers rate the oppositional, hyperactive, and inattentive behaviour of boys on the Conners' Teacher Rating Scales (Conners, 2000). Abikoff *et al.* (1993) asked teachers to rate these behaviours from two videos – one depicting a boy displaying normal behaviour, and the other displaying oppositional behaviour. Teacher ratings of hyperactivity and inattentiveness were significantly higher for the boy who exhibited oppositional rather than normal behaviour, despite levels of hyperactivity and inattentiveness being the same for both.

Other studies have supported the finding that when teachers observe a video tape of a boy displaying oppositional behaviours, they are more likely to rate that boy as having both inattentive and hyperactive behaviours alongside the oppositional behaviour, independent of the actual level of inattention or hyperactivity displayed (Stevens, Quittner & Abikoff, 1998). Stevens *et al.* (1998) examined the ratings of 105 female primary school teachers. They found that teachers rated the boy showing only oppositional behaviours as having substantial symptoms of ADHD also. It is not clear, however, how generalisable these findings, which are based on appraisal of a child in a video, are to a classroom situation.

The gender of the child has been shown to have an influence on halo effects. Jackson and King's (2004) study suggests that even when a girl does present with co-morbid oppositional or conduct behaviours, the halo effect is less marked than is the case for boys. They extended the previous studies by presenting teachers with videos depicting both boys and girls. The boy displaying Oppositional Disorder generated significantly higher teacher ratings of ADHD than his female counterpart. In contrast, hyperactive and inattentive

behaviours were found to elevate ratings of oppositional behaviours, this time particularly for ratings of a girl (Jackson & King, 2004). However, the girl in the video portrayed levels of hyperactivity that were equivalent to a boy with ADHD. As previously discussed, girls typically show lower levels of externalising, hyperactive behaviour. This meant that her behaviour seemed relatively more extreme given normative expectations. Equally, inattentive and hyperactive behaviours were presented together, making it impossible to separate out the effects of these two types of behaviours on ratings of oppositional behaviours, and vice versa. Despite the limitations of the studies presented, however, there still appears to be a tendency for teachers' ratings of ADHD behaviours to be influenced by the presence of oppositional behaviours.

Similar patterns have been found in the case of parents' ratings. In a study of 498 clinically referred children, aged 7-9 years of age, Newcorn *et al.* (2001) found that parents' rated girls and boys with comorbid ADHD and Oppositional or Conduct Disorder as more impulsive and hyperactive than those with ADHD only. Parents' ratings of *inattention* were not similarly affected.

As boys are more likely to demonstrate comorbid, externalising behaviours, they may be more likely to be subject to negative halo effects and therefore receive higher ratings of ADHD symptoms (Abikoff, 1993), which may account for the higher number of boys being referred for assessment and receiving a diagnosis of ADHD compared with girls.

1.4.2.2 Attribution.

The presence of co-morbid oppositional or conduct behaviours has also been found to influence the causes to which the inattentive, hyperactive and impulsive behaviours that characterize ADHD are attributed. Attributional research investigates the reasons that an individual gives to explain a child's behaviour and how this affects the response to it (Miller, 1995). Numerous studies have demonstrated that when parents see children as responsible for their misbehaviour – giving attributions of intentionality and controllability – they are more likely to respond negatively to such behaviour, for example using physical punishment (*e.g.* Slep & O'Leary, 1998). Johnston, Patenaude and Inman (1992) found that when inattentive and hyperactive behaviours were observed together with oppositional behaviours, they were rated as more controllable by the child and elicited more negative reactions than for inattentive and hyperactive behaviours alone. Oppositional behaviours presented in the context of inattentive and hyperactive behaviours were rated as less

controllable and less stable and elicited more negative reactions than oppositional behaviours alone. Co-morbid presentations of these behaviours altered the attributions offered for either behaviour.

There has been investigation into the influence of treatments for ADHD on parents' attributions, which is essential to understanding how such treatments may affect parent-child interaction (e.g. Johnston & Leung, 2001). Equally, the cause to which the adult assessing a child attributes problem behaviour may have an influence on the degree of help sought. This might help to explain the disproportionately high numbers of boys referred for ADHD assessment. Freeman, Johnston and Barth's (1997) study of 26 mothers and 14 fathers of primary school aged children with ADHD, found that parents' interpretation of and reaction to their child's behaviour differed for inattentive, overactive, and oppositional behaviours, elicited through parent interview. Oppositional behaviours were associated with parents viewing ADHD symptoms as less controllable by the child *and* the parent than when the ADHD symptoms occurred alone. When ADHD is co-morbid with Oppositional or Conduct Disorder, a parent may be more likely to seek help for the ADHD symptoms than when they occur on their own, believing them to be less controllable and manageable by themselves or the child. Parents saw themselves as significantly less responsible for inattentive and overactive behaviours as compared to oppositional and defiant behaviours. The influence of help-seeking behaviours on the referral patterns of ADHD is discussed in section 1.6.

1.5 The effect of gender on judgements made about ADHD Behaviours

1.5.1 Social Roles and Expectations

The literature presented so far has explored the different ways in which boys and girls present with ADHD and the possible influence that this has on recognition and referral rates. There is debate, however, about whether the discrepancy between the number of boys and girls with ADHD within clinical samples is due to the nature of the presentation of the disorder or due to other factors, such as differential gender expectations in society (e.g. Berry *et al.*, 1985). A difference in the reported age of onset of ADHD symptoms and the subsequent age of referral for boys and girls has interested researchers. Silverthorn, Frick, Kuer, and Ott (1996) studied a referred sample of 13 girls and 67 boys with a diagnosis of ADHD, aged between 6-13 years of age. They found that, despite finding few differences in ADHD symptomatology between boys and girls, girls were significantly younger at the time of referral (7.42 years), compared with boys (8.77 years). Parental

reports, however, indicated that these girls had a slightly later age of onset of first ADHD symptoms than the boys did. Although based on a very small sample, these results seem to indicate that those parents studied had a lower tolerance for ADHD symptoms in girls and therefore referred them at an earlier age.

Similarly, Berry *et al.*'s (1985) study examined a referred sample of 32 girls and 102 boys with a diagnosis of Attention Deficit Disorder (ADD), the diagnostic term used prior to ADHD. A proportion of the sample was diagnosed with ADD *with hyperactivity* (22 girls and 72 boys). The girls with hyperactivity were significantly younger at the time of referral than boys with hyperactivity. Whereas *boys* with hyperactivity were referred eight months earlier than boys without hyperactivity, *girls* with hyperactivity were referred thirty-eight months earlier than girls without hyperactivity and eighteen months earlier than their male counterparts. Again, these results indicate that hyperactivity is tolerated less well in girls, perhaps because it violates cultural expectations of appropriate gender behaviour. If this is the case, referred girls might be those who have high levels of hyperactivity. Conversely, girls who are inattentive and who are neither disruptive nor severely cognitively impaired might be overlooked because they do not violate a cultural stereotype (Arcia & Conners, 1998).

Other researchers, however, have put forward an alternative explanation for the early referral of girls. It may be indicative of the level of severity of symptoms rather than a reaction to the violation of social norms. Arcia and Conners (1998) found that, within a sample of 41 girls and 167 boys with ADHD, overall, girls were referred at approximately the same average age as boys. They observed a tendency for children with more severe symptoms of hyperactivity or of Conduct Disorder to be referred at a younger age than children with less severe symptoms. This trend was significant for teacher ratings of hyperactivity, suggesting that teacher report of child behaviour is a powerful determinant of parental help-seeking behaviour.

There are potential variations in parental beliefs about inattention, hyperactivity and impulsivity as a function of the sex of the child (Mills & Rubin, 1990). Within non-clinical samples, there is evidence for greater permissiveness toward aggression in boys than girls (*e.g.* Parke & Slaby, 1983), greater emphasis on interpersonal connections and sensitivity in girls than in boys (*e.g.*, Block, 1983), and more negative evaluation of problem behaviours in girls than in boys (Bacon & Ashmore, 1985), one may predict that

parents will respond to those behaviours considered to be symptomatic of ADHD more negatively in girls than in boys. Mills & Rubin (1990) found that mothers reported stronger emotional responses to the problematic social behaviours of daughters than of sons, and fathers were more likely to respond to these behaviours in their daughters than in their sons. These findings suggest that parents may accept deviations in social behaviour less, and intervene to correct them more, in daughters than in sons. This may not be true of the inattentive behaviours typically associated with ADHD in girls, which would help to explain why so few girls with ADHD are seen in clinical settings.

1.5.2 Rater Bias

The diagnosis of ADHD depends, at least in part, on the judgements made by parents and teachers regarding a child's inattentive, hyperactive and impulsive behaviour. The diagnosis remains dependent on the observations of those adults most familiar with the child (Wolraich, 1999). In contrast to adults, children rarely refer themselves for treatment. Instead parents and teachers determine whether children receive mental health care (Weisz, Suwanlert, Chaiyasit, Weiss & Jackson, 1991). Differential referral rates may indicate an important difference in the way in which the behaviour of male and female children is judged, as the behavioural evidence for ADHD is not neutral (Wright, Partridge & Williams, 2000). Inattention, hyperactivity, and impulsivity are found in all children to some degree, the diagnosis of ADHD is based on an assessment of developmentally inappropriate intensity and frequency. These judgments are vulnerable to the possibility of observer bias (Mann *et al.*, 1992).

An adult's perception that a child may need help is often based on a child's performance both academically and behaviourally, at home and at school. Teachers are often the first people to determine that a child has problems requiring mental health services and they can act as a catalyst in drawing parents' attention to the specialist needs of their child (Lurie, 1974). Burns *et al.* (1995) found that, within a sample of children in the USA, seventy five per cent of children receiving mental health services received them through the educational sector.

Studies comparing parent and teacher ratings of children's behaviour have found that teachers tend to rate boys' behaviour as significantly more severe or unmanageable than that of girls. Hartung *et al.* (2003), for example, found that mothers rated no significant difference between boys and girls with ADHD for inattention. In contrast, teachers

reported that boys with ADHD displayed significantly more classroom symptoms of inattention than girls with ADHD. This pattern was replicated for ratings of hyperactivity-impulsivity and Oppositional Defiant Disorder. Similarly, Newcorn *et al.* (2001) found that, in a clinically referred sample, parents and teachers rated boys with ADHD as more symptomatic than girls with ADHD.

Teacher and parent ratings can differ but the direction of difference can also differ from study to study. Sharp *et al.* (1999), for example, found that, with the exception of the teacher's ratings for hyperactivity, which were significantly higher for boys than girls, where differences were found between ratings of boys and girls on the Conners' Teacher Rating Scale, they were in the direction of greater severity for girls than boys. However Sharp *et al.*'s sample of 42 girls with ADHD was diagnosed exclusively with ADHD: Combined type and were described as having a history of severe hyperactivity, impulsivity, and inattention. Equally the 56 boys with ADHD that comprised the control group were not studied at the same time, they had been included in a previous study, and thus cohort effects were not controlled. Measures and rating scales are not standardised across studies and often a study will use *either* parental ratings (*e.g.* Greene *et al.*, 2001) *or* teacher ratings (*e.g.* Carlson, Tamm & Gaub, 1997) and not both.

A meta-analytic review of 38 studies, indicated that parent and teacher ratings generally disagreed (Gershon, 2002). Teachers were found to rate ADHD males as significantly more impaired than ADHD females in comparison to parent reports. Teachers may attend overly to disruptive behaviours and tend to ignore inattentive behaviours (Gershon, 2002). In this way they may over identify males with ADHD and, due to the nature of their presentation of ADHD, in terms of increased levels of externalising behaviours, erroneously rate their symptom severity as higher than that of females with ADHD. As discussed, this may be influenced further by the halo effect that can occur when teachers rate children with Oppositional Defiant Disorder (Reid *et al.*, 2001). As males are more likely to demonstrate these types of behaviours they may be more likely to receive higher ratings of severity.

In this way, teachers may over-recognise ADHD males and neglect to recognise their female counterparts. Teachers and parents may need to be given guidance on how to recognise the predominately inattentive subtype thought to be typified by females.

However, instead of necessarily failing to recognise girls with ADHD, teachers may in fact be correctly identifying the females but overly identifying males (Gershon, 2002).

1.6 Help-seeking Behaviour

Help-Seeking pathways describe the steps that are taken between the initial recognition of a problem and the eventual use of mental health services. As discussed, the first step of this process for young children is often a parent or a teacher recognising the presence of a mental health problem (Wolraich, 1999). However, there are two steps to a child receiving professional assessment: the first one is the labeling of the behaviour as problematic and the second is seeking professional intervention (Bussing, Zima, Gary & Wilson, 2003).

Regardless of the mental health difficulty, referral to clinical services has been found to be low, with epidemiological studies showing that as many as 30% of children with a mental disorder in Great Britain had not been seen by a GP or specialist health care professional (Meltzer *et al.*, 2000). Referral to and use of mental health services has, however, been found to be generally higher for males (Garralda and Bailey, 1988 & Feehan *et al.*, 1990). As discussed, this may be due to differential recognition rates or the steps that are taken following the initial recognition of a mental health difficulty.

Bussing *et al.* (2003) examined 202 boys and 187 girls showing high levels of the symptoms of ADHD, and 51 boys and 40 girls who met DSM-IV criteria for ADHD. They found that gender did not affect *recognition* rates but had a large effect on subsequent *help-seeking* steps. Boys were over five times as likely as girls to receive an evaluation, receive a diagnosis of ADHD or to be under current treatment. The findings suggest that parental recognition of a potential behaviour problem among a group of children at high risk for ADHD was relatively high and that regardless of gender increased the likelihood of problem recognition. However a substantial gap was found between problem recognition and seeking an evaluation for ADHD symptoms. Similarly, Poduska (2000) found that boys were more likely than girls to be perceived by parents and teachers as needing either educational or mental health services.

Greater problem severity also increased the odds of obtaining a professional diagnosis, the proportion of parents who sought professional help and advice increased from 66% in the case of children with one disorder to 77% in the case of children with two disorders and to 89% in the case of children with three or more disorders (Meltzer *et al.*, 2000). As

discussed in section 1.4.2, boys are more likely to present with co-morbid conduct or oppositional behaviours and this may increase the likelihood of an adult seeking a professional consultation.

Bussing *et al.* (2003) also found that parents of children with ADHD symptoms reported higher rates of perceived stigma for seeking treatment for girls compared with boys. This stigma might include feeling embarrassed by the child's behaviour or feeling that others disapprove of them as parents. They note that parents sometimes had an alternative explanation for their child's behaviour and did not see it as a medical issue (Bussing *et al.*, 2003). For some parents, seeking psychiatric help for their children is perceived as an admission of poor parenting. These parents find it easier to consider ADHD as a neurological condition, and on this basis, usually seek help from their paediatrician or a child neurologist (Wolraich, 1999).

Several studies indicate that girls, and children from minority backgrounds are significantly less likely to receive ADHD treatment, including psychotropic medications, than boys and Caucasian children (*e.g.* Zarin *et al.*, 1998). Poduska (2000) found that whilst socio-economic status (SES) did not impact on whether or not parents perceived their children as needing services, it was found to be related to referral to and the use of services, with children from lower SES backgrounds using services less frequently.

1.7 Summary

ADHD is characterised by a pattern of extreme inattention, hyperactivity and impulsivity (APA, 2000) which has been found to have a profound effect on children's academic performance, as well as on family and peer relationships (Frick *et al.*, 1991; Johnston, 1996). Many more boys than girls receive a diagnosis of ADHD and are referred for clinical treatment. Reports from clinical samples have estimated that the ratio of boys to girls may be as high as 9:1 (APA, 2000). Epidemiological studies of ADHD have, however, estimated that gender differences in the disorder are lower than this, with the ratio of boys to girls perhaps being as low as 3:1 (Szatmari, Offord & Boyle, 1989). The disparity between the clinical pattern and that suggested by epidemiological research raises the question as to why girls with ADHD are perhaps missed and why boys with ADHD are more readily recognised.

The higher number of boys referred for treatment may be due to the different ways in which ADHD manifests itself in boys and girls. More boys than girls present with the

ADHD subtypes typified by high levels of externalising hyperactive and impulsive behaviours (e.g. Bierderman *et al.*, 2002). These subtypes are associated with behaviours that are more disruptive, particularly in a school setting where problems are often first detected (Gershon, 2002).

More boys than girls present with co-morbid Conduct Disorder or Oppositional Disorder (Gaub & Carlson, 1997). These co-morbid difficulties can have a negative halo effect on the way in which ADHD are perceived and rated – causing them to be seen as more severe or occurring more frequently than is the case, particularly in the case of boys (Jackson & King, 2004). The presence of co-morbid oppositional or conduct behaviours has also been found to influence the causes to which the inattentive, hyperactive and impulsive behaviours that characterize ADHD are attributed, which may have an influence on help-seeking behaviour (e.g. Freeman *et al.*, 1997).

Different gender expectations may also affect the detection and referral rates of children with ADHD. Girls with hyperactivity were referred earlier than girls without hyperactivity and earlier than their male counterparts (Berry *et al.*, 1985). This may indicate that this behaviour is not expected and therefore not tolerated so well in girls. Girls with inattention may be missed or ignored, as they do not violate a gender stereotype (Arcia & Conners, 1998).

The individual assessor may influence the rates of detection and referral. Studies comparing parent and teacher ratings of children's behaviour have found that teachers tend to rate boys' problem behaviour as more frequent and severe than that of girls (e.g. Hartung *et al.*, 2003). Other studies have found a bias for both parent and teacher raters with both parents and teachers rating boys as more symptomatic than girls (Newcorn *et al.*, 2001).

Finally, help-seeking behaviour may have an influence on referral patterns. Bussing *et al.* (2003) found that gender did not have an affect on recognition rates but had a significant affect on help-seeking behaviour. They found that the parents of girls reported more stigma-related barriers than did those of boys, and that boys were much more likely to be referred to services than girls were.

1.8 Rationale for the Current Study

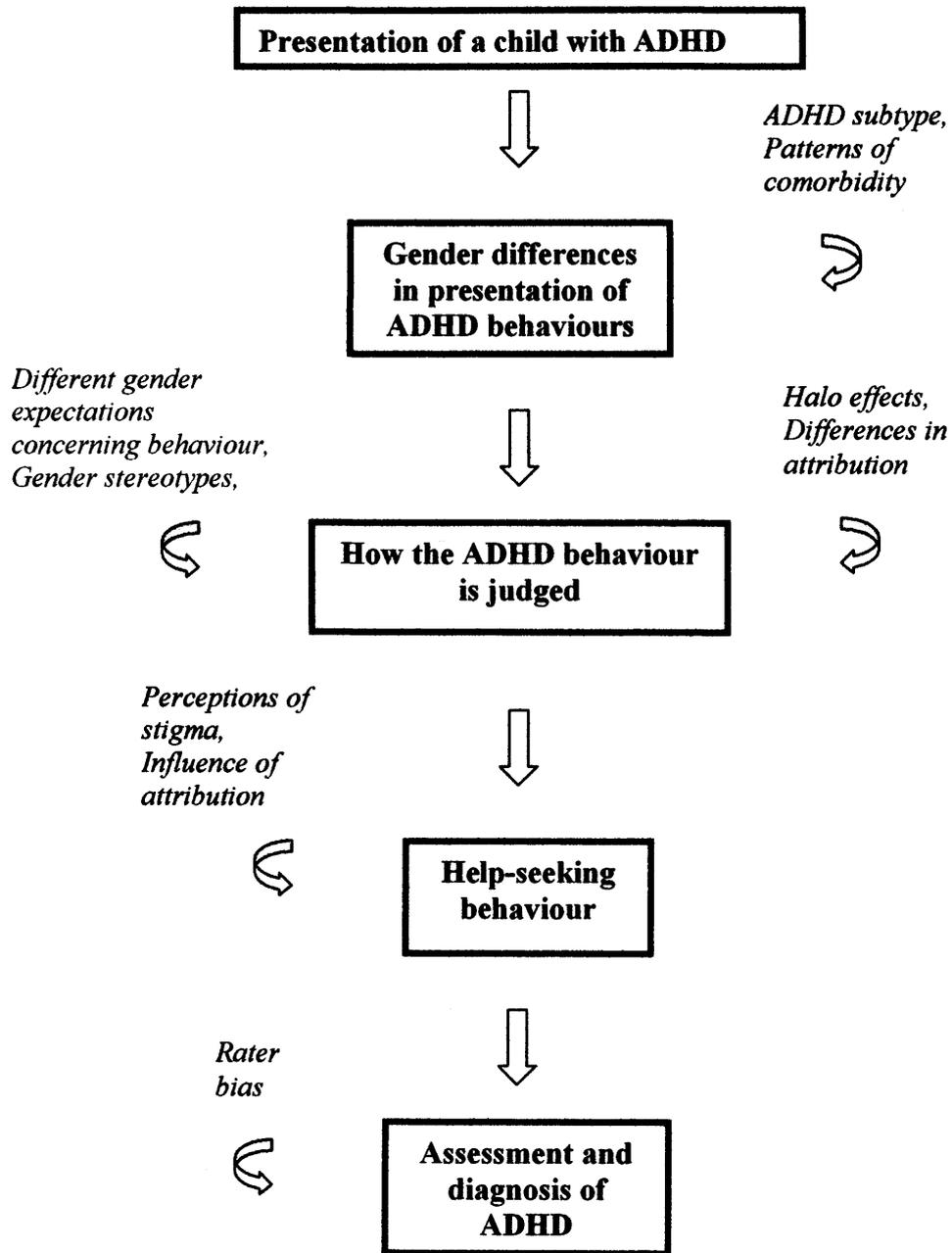
For a diagnosis of ADHD to be made, a child must first be referred to a healthcare professional. Children rarely refer themselves, it is usually parents or teachers who decide whether or not a child needs specialist help (Weisz *et al.*, 1991). Given the central role played by adults, it is important to examine the factors that influence their level of concern about particular behaviours (Weisz *et al.*, 1991). It is extremely important to investigate the attitudes of parents and teachers towards the behaviours associated with ADHD to understand the affect that this has on the way in which children's difficulties are recognised and acted upon. For this reason, epidemiological studies investigating the factors that influence service use are of obvious clinical importance (Sayal, Taylor & Beecham, 2003).

When a child is referred for assessment, the diagnosis of ADHD depends, at least in part, on the judgements made by parents and teachers regarding a child's inattentive, hyperactive and impulsive behaviour (Wolraich, 1999). It is important to understand the assumptions, and values about gender that underlie teachers' and parents' ratings and reports (Arnold, 1996). Teachers' attitudes and opinions are of particular importance as it is often in the school environment that problems with concentration and attention, associated with ADHD, first become evident (Gershon, 2002). Equally, it is difficult to establish a diagnosis of ADHD in pre-school children, younger than the age of 5 years, as their behaviour is likely to include features that are similar to the symptoms of ADHD (APA, 2000).

Teachers and parents are often asked to evaluate children's problems by completing standardised rating scales (Sandoval, 1981). These ratings are then used to make decisions concerning diagnosis. One of the most common instruments used to assess behaviour problems in clinical settings is the Conner's Rating Scale – Revised Version (CRS-R) (Conner, 2000). It has been used in hundreds of research studies around the world (Brenlee, Bloomfield & Lonigan 2003) and is well established and validated (Stevens, Quittner & Abikoff, 1998).

Previous research, as discussed in sections 1.3-1.6, has examined the different ways in which boys and girls present with ADHD and the impact of these differences on adults' reactions to ADHD behaviour. See *Figure 1*. for a summary of these.

Figure 1. Factors influencing an adult's recognition of, interpretation of, and response to a child's ADHD behaviour.



The current study aimed to control for possible differences in the way in which boys and girls present with ADHD, in order to investigate the influence of gender on mothers' and female teachers' ratings of concern about the behaviours associated with ADHD. The study investigated how the gender of a child influences the way in which mothers and female teachers express their concern about the inattentive, hyperactive and impulsive behaviours associated with ADHD, and the oppositional behaviours that frequently co-occur (APA, 2000), as measured by their ratings on the CRS-R. Participants were presented with exactly the same behaviours on the CRS-R for a boy and a girl, which controlled for the influence of actual differences in the presentation of ADHD by boys and girls. This enabled the influence of gender stereotype, gender-specific expectations, and rater bias to be examined.

Concern and worry about a child's behaviour is a primary motivation for referral to specialist services (Bussing *et al.*, 2003). Instead of looking at the perceived frequency and severity of inattentive, hyperactive, impulsive, and oppositional behaviours in relation to boys and girls, the study examined the rater's level of concern about each behaviour (see Method for full details of procedure).

1.9 Research Questions and Hypotheses

Question 1.

When female teachers are asked to rate the behaviours associated with ADHD as anxiety-producing on the Horn Anxiety Rating Scale from ‘not at all worried’ to ‘extremely worried’, do these ratings differ depending on whether they are asked to rate a boy or a girl?

Previous research indicates that teachers rate the behaviour of boys more harshly than that of girls (Hartung *et al.*, 2003), particularly externalising - hyperactive and impulsive - behaviours (Pavuluri *et al.*, 1996; Gershon, 2002). Teachers have been found to show more negative reactions to oppositional, inattentive and hyperactive behaviours when boys display them (Johnston, 1996). The increased occurrence of comorbid oppositional behaviours in boys with ADHD (APA, 2000) increase the likelihood of negative halo effects (Abikoff, 2002), whereby teachers rate ADHD behaviours as more severe or frequent than is the case. These effects are particularly evident when teachers judge the behaviour of boys (Jackson & King, 2004). These research findings have determined the direction of the following hypotheses, in the direction of higher ratings of concern for boys compared to girls.

Hypothesis 1 (H₁)

Teachers will rate inattentive behaviours as more worrying when they rate a boy, compared with a girl.

Hypothesis 2 (H₂)

Female teachers will rate hyperactive behaviours as more worrying when they rate a boy, compared with a girl.

Hypothesis 3 (H₃)

Female teachers will rate impulsive behaviours as more worrying when they rate a boy, compared with a girl.

Hypothesis 4 (H₄)

Female teachers will rate oppositional behaviours as more worrying when they rate a boy, compared with a girl.

Question 2.

When mothers are asked to rate the behaviours associated with ADHD as anxiety-producing on a scale from 'not at all worried' to 'extremely worried', do these ratings differ depending on whether they are asked to rate a boy or a girl?

Previous research has indicated that parents show greater permissiveness towards aggression in boys (*e.g.* Parke & Slaby, 1983), they may therefore rate themselves as more concerned by oppositional behaviours when considering a girl. Researchers have found that parents tend to evaluate the problem behaviour of girls more negatively than that of boys (*e.g.* Bacon & Ashmore, 1985; Mills & Rubin, 1990). These research findings have determined the direction of the following hypotheses, in the direction of higher ratings of concern for girls compared to boys.

Hypothesis 5 (H₅)

Mothers will rate inattentive behaviours as more worrying when they rate a girl, compared with a boy.

Hypothesis 6 (H₆)

Mothers will rate hyperactive behaviours as more worrying when they rate a girl, compared with a boy.

Hypothesis 7 (H₇)

Mothers will rate impulsive behaviours as more worrying when they rate a girl, compared with a boy.

Hypothesis 8 (H₈)

Mothers will rate oppositional behaviours as more worrying when they rate a girl, compared with a boy.

Method

2.1 Overview

The aim of this study was to find out whether there were different levels of concern expressed for the same behaviour patterns when mothers and female teachers were asked to consider a male child, compared with consideration of a female child. To test the hypotheses summarised in table 2, the research design facilitated a comparison between how concerned mothers and teachers considered themselves to be by the same behaviours when shown by a boy or a girl.

This chapter will describe the design of the study. The rationale will be presented regarding the choice of measures and participants. The research procedure will be outlined including the pilot study, and the dissemination of the results to the participants at the end of the research process.

Table 2. Summary of hypotheses - teachers and mothers.

<i>Behaviour Type</i>	Teachers	Mothers
Inattentive	H ₁ Teachers' ratings will be higher for a boy	H ₅ Mothers' ratings will be higher for a girl
Hyperactive-impulsive	H ₂ Teachers' ratings will be higher for a boy	H ₆ Mothers' ratings will be higher for a girl
Restless-impulsive	H ₃ Teachers' ratings will be higher for a boy	H ₇ Mothers' ratings will be higher for a girl
Oppositional	H ₄ Teachers' ratings will be higher for a boy	H ₈ Mothers' ratings will be higher for a girl

2.2 Design

The possible differences in the way in which mothers and female teachers rated their concern about the behaviour of boys, as compared to the behaviour of girls, were investigated using a cross sectional survey design. The advantages of using questionnaires was that they were easy to administer and were a cost-effective method of accessing a large number of participants (Wilson, 1993). The questionnaire developed for use in this study will be referred to as the Horn Anxiety Rating Scale - an amended version of a widely used, clinical scale - Conners' Rating Scale – Revised Version (CRS-R) (Conner, 2000), which is described in detail in the '*Measures*' section.

2.3 Participants

2.3.1 Teachers

A sample of female teachers from five randomly selected primary schools in Leicester City took part in the study ($N = 46$). The inclusion criterion for participating schools was that they were state primary schools in Leicester City. The inclusion criteria for teachers was that they must be female teachers employed in these schools. Only female teachers were sampled due to the relatively small number of participants anticipated. There are significantly fewer male teachers in primary schools (Statistics & Data Services Team, Leicester City Council, 2003) so there would be insufficient numbers to ensure a meaningful comparison.

2.3.2 Mothers

A sample of mothers was drawn from the first of the two participating schools – school A and school B ($N = 61$). The inclusion criterion for mothers was that they had a 7 or 8-year-old child currently attending either school A or B. Only mothers were sampled due to the relatively small number of participants anticipated. There would have been insufficient numbers to further divide the participants by gender.

2.3.3 School Demographics

All schools were Local Educational Authority (LEA) maintained primary schools. The socio-economic characteristics of each school, as measured by the percentage of pupils entitled to free school meals, the percentage of pupils for whom English is an additional language (EAL) and the percentage of pupils registered as having special educational needs (SEN), is presented in Table 3. The total number of pupils on the school roll at the time of data collection is also presented. These measures are compared to the LEA average (Statistics & Data Services Team, Leicester City Council, 2003).

Table 3. Demographic data for the five participating schools as compared to local educational authority (LEA) averages.

	School A	School B	School C	School D	School E	LEA average
Total no. of pupils	261	282	681	338	496	303
% Free school meals	10.4	7.3	10.1	8.9	21.8	26.6
% English as an additional language (EAL)	26.3	3.9	23.5	3.4	5.4	40.5
% Special educational needs (SEN)	14.2	10.3	13.4	16.9	21.6	23.6

2.4 Measures

In clinical practice formalised rating scales are a frequent addition to the process of assessing a child's level of functioning at home and at school. Parents, teachers, and sometimes the children themselves, are asked to rate the severity or the frequency of certain behaviours that are associated with a particular construct, such as ADHD. The Conners' Rating Scale – Revised Version (CRS-R) (Conner, 2000) is a well-established, validated and frequently used rating scale in the assessment of ADHD.

Since the introduction of the original version in 1970, the psychometric properties of the Conners' rating scales have been well studied (*e.g.* Blouin, Conners, Seidel & Blouin, 1989). Test-retest studies have shown good reliability (Glow, Glow & Rump, 1982) and inter-rater reliability has been established (Conners, 1973). The scales have been used as a screening measure, treatment monitoring device, research instrument, and direct clinical and diagnostic aid (Conners, 2000). They are suitable for reporting on children and young people aged 3-17 and normative data comes from a large community-based sample of parents, teachers, children and adolescents collected throughout the United States and Canada (n=8.000+). It is one of the most frequently used teacher rating scales (Stevens, Quittner & Abikoff, 1998) and consultation with the head of Child and Adolescent Mental Health Services (CAMHS) in Leicester City confirmed that the CRS-R is the most frequently used tool in clinical practice.

The CRS-R has three versions, one for parents, one for teachers and a self-report version. There is a long version and a short version of each. All the versions are equivalent in terms of strengths of norms, reliability and validity (Conner, 2000). The Horn Anxiety Rating Scale developed for this study was based on the long versions of the CRS-R. The long versions of the teacher (CTRS-R:L, see Appendix A) and parent (CPRS-R:L, see Appendix B) scales contain the same subscales, with the exception of the Psychosomatic subscale, which is only on the parent version. They cover a broad range of problems or behaviours, including the DSM-IV symptom subscales that are directly related to ADHD symptoms and correspond to the official ADHD criteria in DSM-IV (APA, 1994). The subscales analysed in this study are presented in table 4. Three of the subscales relate to the core symptoms of ADHD – inattention, hyperactivity and impulsivity. The oppositional subscale is included also as oppositional behaviours frequently co-occur with ADHD (APA, 2000). See Appendix C for items relating to each subscale on the CRS-R.

Table 4. Subscales relating to the ADHD construct, and comorbid oppositional behaviours.

	No. of items	
	Teachers' version CTRS-R:L	Mothers' version CPRS-R:L
DSM-IV Symptoms Subscale: Inattentive	9	9
DSM-IV Symptoms Subscale: Hyperactive-impulsive	9 (6 hyperactive, 3 impulsive)	9 (6 hyperactive, 3 impulsive)
Conners' Global Index: Restless-impulsive	6	7
Oppositional Subscale	6	10

2.4.1 Horn Anxiety Rating Scale

The *original* CTRS-R:L and CPRS-R:L consist of a series of statements about a child's behaviour with which the respondents indicate their level of agreement on a Likert scale. Respondents are asked to consider a specific child and to rate the *frequency* of each behaviour listed. They are asked to rate each behaviour on the following scale:-

Not at all true	Just a little true	Pretty much true	Very much true
0	1	2	3

The Horn Anxiety Rating Scale presented the participants with a fictional 7-year-old child and asked them to rate how *worried* they would be if that child showed each of the behaviours listed. They were asked to rate how worried they would be by each behaviour on the following scale:-

Not at all worried	a little worried	very worried	extremely worried
0	1	2	3

Teachers were asked to complete two Horn Anxiety Rating Scales – one rating how worried they would be by each behaviour if it were displayed by a 7-year-old boy (see Appendix D) and the other how worried they would be if it were displayed by a 7-year-old girl (see Appendix E). They were also asked to indicate their age, ethnicity, and the Key Stage in which they were currently teaching by marking the appropriate boxes at the end of the questionnaire.

Mothers were asked to complete one Horn Anxiety Rating Scale – *either* rating how worried they would be by each behaviour if it were displayed by a 7-year-old boy (see Appendix F) *or* rating how worried they would be if it were displayed by a 7-year-old girl (see Appendix G). They were also asked to indicate their age and ethnicity by marking the appropriate boxes at the end of the questionnaire.

The wording of some of the items on the CRS-R was revised for the Horn Anxiety Rating Scale to make it easier for British participants to understand. These changes are presented in table 5.

Table 5. Changes to the wording of individual items on the amended CRS-R

Original CRS-R	Horn Anxiety Rating Scale
Sassy	Cheeky
Not reading up to par	Reading is not as good as you would expect for someone his/her age
Hard to control in malls or while grocery shopping	Hard to control in shopping centres or while grocery shopping

2.4.2 Reliability

The internal reliability of the items on the Horn Anxiety Rating Scale, as measured by Cronbach's alpha coefficient, was compared to those obtained for 6-8 year olds on the original CRS-R (Conner, 2000) for each of the four key subscales. These are presented in table 6. The internal reliability for the Horn Anxiety Rating Scale was found to be high for each of the subscales relating to this study, for both males and females.

Table 6. Internal Reliability Coefficients for the *original* CTR and CPR (age group 6-8 yrs) and the Horn Anxiety Rating Scales.

	DSM-IV Symptoms Subscale: Inattentive		DSM-IV Symptoms Subscale: Hyperactive- Impulsive		Conners' Global Index: Restless- impulsive		Oppositional Subscale	
	M	F	M	F	M	F	M	F
<i>CTR</i>	0.946	0.950	0.947	0.931	0.910	0.879	0.920	0.904
<i>Horn Anxiety Rating Scale (teachers)</i>	0.820	0.831	0.825	0.863	0.785	0.755	0.833	0.833
<i>CPR</i>	0.930	0.929	0.911	0.918	0.890	0.888	0.917	0.903
<i>Horn Anxiety Rating Scale (mothers)</i>	0.929	0.926	0.867	0.890	0.869	0.871	0.838	0.923

2.4.3 Teachers' Experience of Children with ADHD

Following data collection, teachers were given a brief questionnaire, developed by the researcher, to ascertain their prior experience of working with children with suspected or diagnosed ADHD (appendix H).

2.5 Research Procedure

2.5.1 Ethical Approval

The research proposal was first submitted to the Research and Assessment sub-committee of the School of Psychology – Clinical Section. A meeting to discuss the project in more detail followed this. Permission was then given by the committee to apply to the Health Authority Ethics Committee.

The study was considered and approved by the Research and Development Operation Group, Leicestershire Partnership NHS Trust. The Trust formally agreed to act as Research Sponsor and the Principal Investigator was covered by Trust Research indemnity.

The School of Psychology University of Leicester Ethics Committee also approved the study.

2.5.2 Pilot Study

The study was preceded by a pilot study conducted on a small number of participants from the target population. Participants were recruited from a primary school known to the researcher, which was not within Leicester City, so did not need to be excluded from the main study. The pilot study comprised a sample of six female primary school teachers and six mothers, and yielded useful administrative information. Following feedback from it, the words 'items continued overleaf' were added to the bottom of the first page of the questionnaire, as one respondent failed to realise that there were additional items on the other side of the page. In addition, future participants were explicitly requested to circle only one response to each item, as a number of participants in the pilot study had circled two.

2.5.3 Data Collection

2.5.3.1 Teachers - phase 1.

Each of the 86 primary schools in Leicester City was assigned a number from 1-86, and, at random, 4 schools were selected. A telephone call was made to the Head Teacher of each school to establish initial interest, a meeting was arranged to discuss the study in detail, the Information Sheet (Appendix I) was discussed, and a consent form was signed (Appendix J). All four schools agreed to participate.

Two weeks prior to the agreed start-date for data collection a letter was sent to each qualified female teacher in the school outlining the research. An 'opt-out' consent form, which would exclude that teacher from the study without giving a reason, formed part of this letter (Appendix K). However none of the teachers formally opted out.

The first of the teachers' questionnaires was then sent. Two weeks later the first questionnaires were collected and the second questionnaires delivered. The questionnaires were randomly distributed, with some teachers receiving the questionnaire asking for ratings for a female child first and others asking for ratings for a male child first.

Two weeks after delivery of the second and final questionnaire, the completed questionnaires were collected from the school.

At the end of phase 1 of data collection 26 of the 49 teachers had completed both questionnaires - a response rate of 53 percent. The time between initial contact with the school and final collection of completed questionnaires was three calendar months.

2.5.3.2 Teachers - Phase 2.

At the end of Phase 1, due to the length of time taken to collect data during phase 1, and the relatively low response rate, a different approach was used. As before, a school was selected at random, a meeting was held with the Head Teacher, a revised information sheet was discussed (see appendix L) and a consent form signed.

The Head Teacher then addressed the female staff and explained that the researcher would attend the opening part of the next staff meeting in order to explain the research process in greater detail, and to hand out the first of the two questionnaires. Any teachers who did not wish to take part were asked to opt-out of the first part of the staff meeting, but all twenty teachers attended.

The researcher outlined the study in brief; explaining that a full discussion would follow, with feedback of the results, after both questionnaires had been completed so as to minimise bias to the teachers' responses. The first questionnaire was completed during the first 15 minutes of the staff meeting and collected by the researcher.

Two weeks later the researcher attended a second staff meeting during which the second questionnaire was completed. At the end of Phase 2 of data collection all 20 teachers had completed both questionnaires.

All teachers participating in phase 2 of data collection completed the questionnaire asking for ratings for a male child first. The order of questionnaires was not randomised in order to minimise bias to participants' responses. In total, 32 teachers completed ratings for a male child first (70%), while the remaining 14 completed ratings for a female child first (30%).

2.5.3.3 Mothers.

The first two participating schools also gave consent for the researcher to access mothers of 7 or 8-year-old children attending the schools. A letter was sent from the Head Teacher to all mothers of Year 3 children inviting them to take part in the research project (see appendix M), together with a questionnaire.

The questionnaires were randomly distributed, with some mothers receiving the questionnaire asking for ratings for a female child and others asking for ratings for a male child. A slightly larger percentage of participants returned completed ratings for a male child, 54% of the total sample with the remaining 46% returning completed ratings for a female child. At the end of data collection 61 of the 128 mothers of Year 3 children had returned a completed questionnaire - a response rate of 48%.

2.5.4 Dissemination and Discussion of the Results with Respondents

Once data collection had been completed and the results analysed, feedback sessions were arranged with the participating schools. The researcher was invited to attend staff meetings at two of the participating schools, schools D and E, during which the results of the project were presented and discussed with participants. This feedback is discussed in relation to the results of the study in the Discussion section. The remaining three schools were given written feedback with the opportunity to discuss the results (see Appendix N). Written feedback was produced and distributed to mothers of Year three children at Schools A and B (see appendix O).

2.6 Ethical considerations

2.6.1 Confidentiality

To ensure anonymity and to comply with the Data Protection Act (1998), all data were kept under secure conditions. Each school was assigned a letter of the alphabet and all completed questionnaires were marked with the letter in order to identify the school. As teachers completed two questionnaires, the initials of participating teachers were recorded on the questionnaires so that they could be matched. To retain the teachers' anonymity only their initials were put on any correspondence and the researcher was not aware of their full name. It was agreed that the results of the study would be anonymous in all published material.

2.6.2 Consent

Prior to data collection, consent was obtained from the Head Teacher of each school to send correspondence to staff concerning the project. Teachers in phase 1 of data collection were given an information sheet explaining the study and were asked to return an attached opt-out form if they did not wish to receive the questionnaires. This is a recognised and reliable method of obtaining consent which has been employed both nationally and locally (Rigby, 1999). Teachers in phase 2 of data collection were given the opportunity to opt out by not attending the opening part of the staff meeting.

All the mothers were given questionnaires together with the letter of invitation. They were invited to complete the questionnaire and to return it to the school in an envelope provided if they chose to do so. If they did not wish to take part they were asked to ignore the letter.

2.6.3 Non-participation – Teachers

The number of teachers from each school who did not complete questionnaires was recorded. Table 7 shows the number of participants who participated in the study and the proportion of teachers who opted out for each school.

Table 7. No. of participating teachers and percentage who opted out.

	School A	School B	School C	School D	School E
No. of participants	2	5	9	10	20
% opting out	71%	50%	59%	0%	0%

2.6.4 Non-participation – Mothers

The number of mothers who did not complete and return a questionnaire was recorded. Forty-seven percent of the mothers of Year 3 children at school A participated in the study ($N = 38$). Forty-nine percent of mothers of Year 3 children at school B participated in the study ($N = 23$). Participants from school A comprised 62% of the total sample with participants from school B comprising the remaining 38%.

2.6.5 Incentive

Individual teachers and mothers were not compensated for their participation, however a WHSmith voucher to the value of £2.50 was presented to the school for each completed questionnaire. This was given to the school, rather than to individual participants, to avoid being seen as enticement for individuals to take part in the study. The vouchers provided an incentive for schools to take part in the study and were used as a means of thanking the school for their participation. This was funded jointly by the Doctoral Training Programme and Leicester CAMHS service.

2.7 Statistical Analyses

The study investigated possible differences between the way mothers and female teachers rated their concern in relation to the same behaviour whether displayed by a boy or by a girl. The individual behaviour items presented on the Horn Anxiety Rating Scale form a number of subscales or groups of behaviour patterns. The subscales selected for statistical analysis and discussion in this study related to the three core features of ADHD - inattention, hyperactivity and impulsivity – and oppositional behaviours, which frequently occur alongside ADHD.

2.7.1 Teachers

A within-subject design was used in the analysis of the sample of female teachers ($N=46$) as each teacher completed ratings for a boy *and* a girl. The statistical test used to compare mean ratings on each of the four subscales was a Wilcoxon matched-pairs Signed Ranks test.

2.7.2 Mothers

A between-subject design was used in the analysis of the sample of mothers ($N=61$) as each mother completed ratings for a boy *or* for a girl. The statistical test used to compare mean ratings on each of the four subscales was a Mann-Whitney U test.

2.8 Power Analysis

2.8.1 Teachers

A prospective power analysis was employed to determine the sample size needed to achieve an 80 per cent (0.8) power efficiency for the Wilcoxon matched-pairs Signed Ranks tests for a paired-sample design. This level of power is generally acceptable when there are no previous studies on which to base a decision (e.g. Cohen, 1988). To detect a medium effect size ($d = 0.5$), for one-tailed hypotheses, the sample needed for a within subject t test was multiplied by 1.05 to determine the sample size needed to achieve an equivalent power efficiency using the Wilcoxon test (Clark-Carter, 1997). A sample of 27 female teachers was needed.

2.8.2 Mothers

A prospective power analysis was employed to determine the sample size needed to achieve an 80 per cent (0.8) power efficiency for the Mann-Whitney U tests for a between-subject design. To detect a medium effect size ($d = 0.5$), for one-tailed hypotheses, the sample needed for a between-subject t test was multiplied by 1.05 to determine the sample size needed to achieve an equivalent power efficiency using the Mann-Whitney U test (Clark-Carter, 1997). A sample of 100 mothers – 50 in each group was needed. This was not possible given the time and resources available for the project. It was therefore anticipated that the results obtained from the sample of mothers would need to be viewed with caution. A retrospective power analysis was calculated on the sample achieved and is discussed in the 'Results' section.

Results

3.1 Overview

This study investigated the reasons for the low numbers of girls with ADHD seen in clinical settings. Previous research, as discussed in chapter 1, has examined the different ways in which boys and girls present with ADHD and the impact of these differences on the reaction of adults to ADHD behaviours. The current study aimed to control for possible differences in the way in which boys and girls present with ADHD, in order to investigate the influence of gender on parents and teachers ratings of concern about the behaviours associated with ADHD. The study investigated how the gender of a child influences parents' and teachers' expression of concern about the inattentive, hyperactive and impulsive behaviours associated with ADHD, and the oppositional behaviours that frequently co-occur, as measured by their ratings on the Horn Anxiety Rating Scale. A total of 46 teachers completed two Horn Anxiety Rating Scales – one rating a boy (see Appendix D) and the other a girl (see Appendix E). A total of 61 mothers completed one Horn Anxiety Rating Scale – *either* rating a boy (see Appendix F) *or* a girl (see Appendix G). Eight hypotheses were proposed, based on previous research findings, as summarised in Table 2.

3.2 Order Effects

Teachers completed two questionnaires each. The order in which the two questionnaires were completed was randomly assigned to teachers from schools A, B, C, and D, during Phase 1 of data collection, with some teachers rating a girl first and some a boy. However, the teachers from School E, during Phase 2 of data collection, all completed the questionnaires at the same time during a staff meeting. They were, therefore, all given the same questionnaire asking them to rate a boy first. The majority of the sample of teachers completed questionnaires rating a boy first ($N = 32$), 70% of the sample. The remaining 30% ($N = 14$) completed the questionnaire rating a girl first.

To investigate possible order effects, independent-samples *t*-tests were conducted to compare mean ratings for boys rated first compared to boys rated second, and mean ratings for girls rated first compared to girls rated second for each of the four principal subscales.

- DSM-IV Symptoms Subscale: Inattentive
- DSM-IV Symptoms Subscale: Hyperactive-impulsive
- Conner's Global Index: Restless-impulsive
- Oppositional Subscale

The order in which teachers completed the questionnaires did not have any significant effect on teachers' ratings of concern for boys or for girls. This is summarised in Table 8.

Table 8. Results of *t* tests examining questionnaire order effects on teacher ratings.

	DSM-IV Symptoms Subscale: Inattentive			DSM-IV Symptoms Subscale: Hyperactive- impulsive			Conners' Global Index: Restless- impulsive			Oppositional Subscale		
	<i>M</i>	<i>SD</i>	<i>p</i>	<i>M</i>	<i>SD</i>	<i>p</i>	<i>M</i>	<i>SD</i>	<i>p</i>	<i>M</i>	<i>SD</i>	<i>p</i>
boy 1 st	11.74	3.44	.757*	11.93	3.61	.586*	7.26	2.50		11.28	3.48	.694*
boy 2 nd	12.07	2.87		12.57	3.55		6.79	2.69	.570*	11.69	2.18	
girl 1 st	11.46	2.63	.461*	10.90	3.89	.637*	6.53	2.27		10.71	3.29	.893*
girl 2 nd	10.72	3.18		11.50	3.89		6.07	1.94	.515*	10.57	2.88	

**P* = > .05, therefore not significant.

3.3 Teachers' experience of children with ADHD

When teachers were given feedback following data collection, they were also asked to complete a brief questionnaire about their experience of working with children with ADHD (see Appendix H). A total of 35 out of the 46 participants completed this questionnaire – a return rate of 76%. Table 9 shows the number of teachers who answered 'yes' and 'no' to each of the two questions. Where a teacher answered 'yes' they were asked to indicate the gender of the child involved. The numbers of boys and girls do not reflect true numbers as teachers often used phrases such as 'many' or 'several'. Where gender was indicated this was counted once, regardless of the actual numbers of children involved. It is clear that where teachers indicate having had experience of working with a child with ADHD, or suspected ADHD, this experience is predominantly with boys. The majority of teachers (66%) indicated that they had experience of working with a child with suspected ADHD, and a large percentage (40%) indicated that they had worked with a child with a confirmed diagnosis of ADHD.

Table 9. Teachers' experience of working with a child with ADHD.

Question	Response					
	Yes	No				
1. Have you ever taught a child with a diagnosis of ADHD?	14 (40%)	21 (60%)				
	<table border="1"> <tr> <td>No. of boys</td> <td>No. of girls</td> </tr> <tr> <td>14 (100%)</td> <td>0 (0%)</td> </tr> </table>		No. of boys	No. of girls	14 (100%)	0 (0%)
No. of boys	No. of girls					
14 (100%)	0 (0%)					
2. Have you ever taught a child with suspected ADHD?	23 (66%)	12 (34%)				
	<table border="1"> <tr> <td>No. of boys</td> <td>No. of girls</td> </tr> <tr> <td>17 (74%)</td> <td>6 (26%)</td> </tr> </table>		No. of boys	No. of girls	17 (74%)	6 (26%)
No. of boys	No. of girls					
17 (74%)	6 (26%)					

Note: Where the teacher indicated experience, by choosing the 'yes' response, this is divided into experience of boys or girls.

3.4 Descriptive Statistics

3.4.1 Teachers

A total of 46 teachers completed both questionnaires; 2 participants came from school A (2%), 5 from school B (11%), 9 from school C (20%), 10 from school D (22%), and 20 from school E (43%). All participants identified themselves as White British. They were divided between the following age groups; 39% over 50, 21% between 41-50, 20% between 31-40, and 20% between 20-30. Representation was even across the Key Stage in which participants taught, with 28% teaching Foundation Key Stage (Nursery and Reception), 28% teaching Key Stage 1 (Years 1-2), and 44% teaching Key Stage 2 (Years 3-6).

3.4.2 Mothers

A total of 61 mothers completed questionnaires; 38 participants came from school A (62%), and 23 participants came from school B (38%). Slightly more mothers completed questionnaires rating a boy ($N = 33$) than questionnaires rating a girl ($N = 28$). The majority of the sample, 87%, identified themselves as White British, 3% as Mixed White/Asian, 2% as Asian or Asian British, 2% as Black or Black British, and 1% as Mixed White/Black Caribbean or African. The majority of participants, 59%, placed themselves in the group aged 31-40, 28% aged 41-50, and 13% aged 20-30.

3.5 Measures of Central Tendency and Dispersion

3.5.1 Teachers

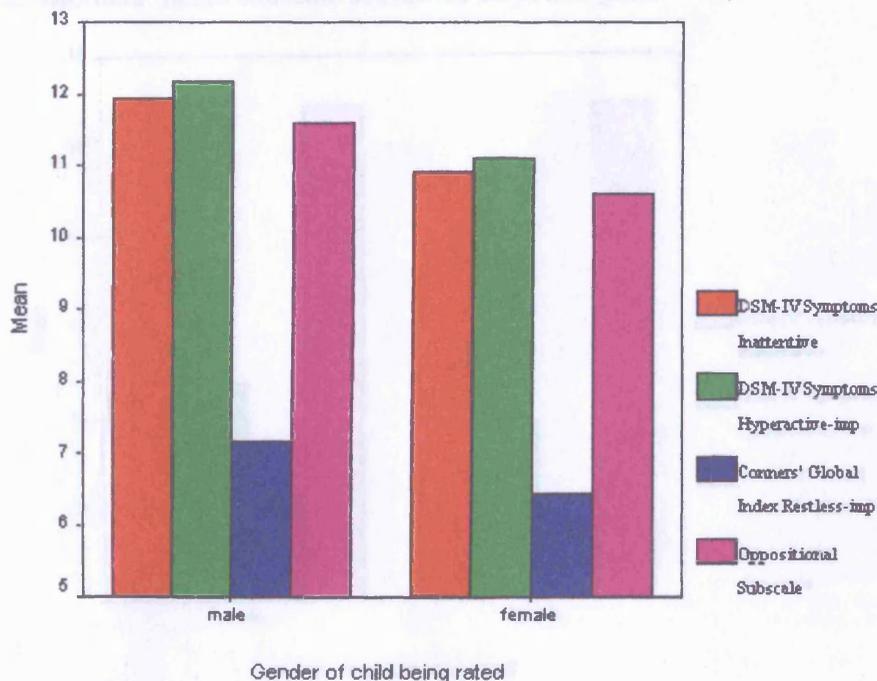
The mean (*M*) total score for each of the key subscales relating to the ADHD construct and for the Oppositional subscale were calculated, along with a measure of how variable the scores were within the sample of teachers (*SD*). These are presented in table 10.

Teachers' average ratings of concern were higher when they were considering a *boy* compared to a *girl* for each of the four subscales (see *Figure 2*). Tests of statistical significance are reported in section 3.6.1.

Table 10. Measures of Central Tendency and Dispersion for teachers' scores on the Horn Anxiety Rating Scale

	DSM-IV Symptoms Subscale: Inattentive 9 items - possible score 0-27		DSM-IV Symptoms Subscale: Hyperactive- impulsive 9 items - possible score 0-27		Conners' Global Index: Restless- impulsive 6 items - possible score 0-18		Oppositional Subscale 6 items - possible score 0-18	
	Male	Female	Male	Female	Male	Female	Male	Female
<i>M</i>	11.84	10.93	12.14	11.07	7.11	6.39	11.40	10.67
<i>SD</i>	3.25	3.02	3.56	3.66	2.54	2.16	3.12	3.13

Figure 2. Teachers' mean subscale scores for boys and girls.



Note: mean scores are not comparable between subscales as comprise different numbers of items (see Table 4, Section 2.4)

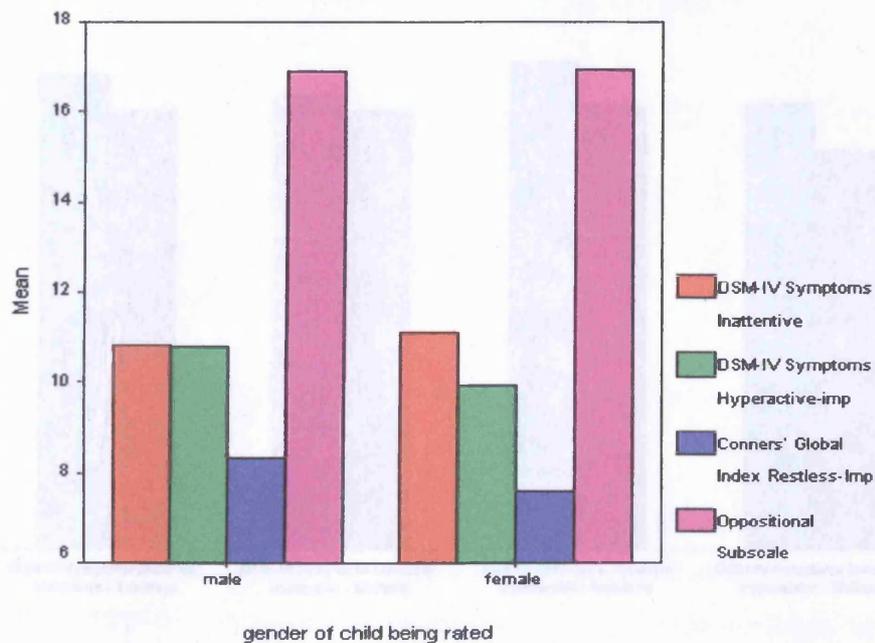
3.5.2 Mothers

The mean (M) total score for each of the key subscales relating to the ADHD construct and for the Oppositional subscale were calculated, along with a measure of how variable the scores were within the sample of mothers (SD). These are presented in table 11. Mothers' average ratings of concern about inattentive, hyperactive, and restless-impulsive behaviours were slightly higher when they were considering a *boy* compared to a *girl*. In contrast, mothers' average ratings of concern about oppositional behaviours were very slightly higher when they were considering a *girl* compared to a *boy* (see Figure 3). Tests of statistical significance are reported in section 3.6.2.

Table 11. Measures of Central Tendency and Dispersion for mothers' scores on the Horn Anxiety Rating Scale

	DSM-IV Symptoms Subscale: Inattentive 9 items - possible score 0-27		DSM-IV Symptoms Subscale: Hyperactive- impulsive 9 items - possible score 0-27		Conners' Global Index: Restless- impulsive 7 items - possible score 0-21		Oppositional Subscale 10 items - possible score 0-30	
	Male	Female	Male	Female	Male	Female	Male	Female
M	11.32	10.93	11.13	9.96	8.59	7.78	16.73	16.79
SD	6.00	5.46	5.54	4.94	4.04	3.95	5.30	6.43

Figure 3. Mothers' mean subscale scores for boys and girls.



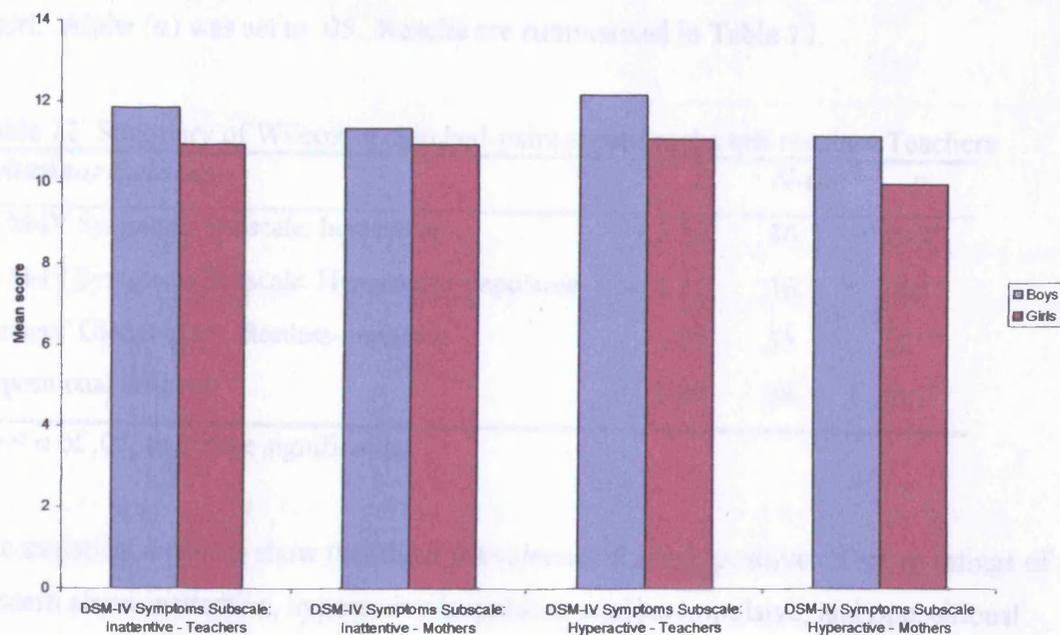
Note: mean scores are not comparable between subscales as comprise different numbers of items (see Table 4, Section 2.4)

3.5.3 DSM-IV Symptoms Subscales

These subscales correspond to the diagnostic criteria for ADHD outlined in the DSM-IV (APA, 1994). Both the teachers' and the mothers' version of the CRS-R contains 9 items relating to inattentive behaviours and 9 items relating to hyperactive-impulsive behaviours (6 to hyperactivity and 3 to impulsivity). As both versions contain identical items, it was possible to compare the mean ratings made by teachers and mothers on these two subscales (see Figure 4).

Teachers and mothers had very similar mean ratings of concern for inattentive behaviours, both being slightly higher for boys than for girls. Teachers' mean ratings of concern about hyperactive-impulsive behaviours, however, were higher than their mean ratings of concern about inattentive behaviours for girls *and* boys. In contrast, mothers' mean ratings of concern were similar or slightly lower for hyperactive-impulsive behaviours than for inattentive behaviours. Teachers' mean ratings of concern about hyperactive-impulsive behaviours were higher than the mothers' mean ratings of concern about hyperactive-impulsive behaviours for both boys and girls.

Figure 4. Teachers' and mothers' mean ratings on DSM-IV Symptoms Subscales for boys and girls.



3.6 Statistical Analyses

Data were analysed using the statistical package for the social sciences (SPSS). In the first instance, the choice of parametric or non-parametric tests was considered. For parametric tests to be used, data must be normally distributed (Clark-Carter, 1997). The One Sample Kolmogorov-Smirnov Test was used to assess whether scores for each subscale were normally distributed (Pallant, 2001). Much of the data in this study was not normally distributed (see Appendix P for Kolmogorov-Smirnov Test data). In addition, there is debate about whether a Likert scale, such as that used in the current study, which results in ordinal data, can be analysed using parametric tests that assume that the data are interval (Siegel & Castellan, 1988). Parametric and non-parametric equivalent analyses were conducted on both teacher and mother data. The results were slightly more conservative with the non-parametric tests, which made fewer assumptions about the data and these are reported here.

3.6.1 Teachers

Wilcoxon Matched-Pairs Signed Ranks Tests were conducted to compare teachers' mean ratings of concern about inattentive, hyperactive-impulsive, restless-impulsive, and oppositional behaviours for boys and girls. All were one-tailed analyses as it was predicted that scores would be higher when teachers were considering a boy, compared to a girl. Alpha (α) was set to .05. Results are summarised in Table 12.

Table 12. Summary of Wilcoxon matched-pairs signed ranks test results - Teachers

<i>Behaviour Subscale</i>	<i>z</i>	<i>N-ties</i>	<i>p</i>
DSM-IV Symptoms Subscale: Inattentive	2.28	36	.012*
DSM-IV Symptoms Subscale: Hyperactive-impulsive	2.41	36	.008*
Conners' Global Index: Restless-impulsive	1.93	35	.027*
Oppositional Subscale	3.09	34	.001*

* $p < \alpha$ of .05, therefore significant

The statistical analyses show that there is evidence of a real, positive effect on ratings of concern about inattentive, hyperactive-impulsive, restless-impulsive, and oppositional behaviours when teachers are rating boys compared to girls, in the predicted direction of higher ratings for boys.

3.6.2 Mothers

Mann Whitney U Tests were conducted to compare mothers' mean ratings of concern about inattentive, hyperactive-impulsive, restless-impulsive, and oppositional behaviours for boys and girls. All were one-tailed analyses as it was predicted that scores would be higher when mothers were considering a girl, compared to a boy. Alpha (α) was set to .05. Results are summarised in Table 13.

Given the relatively small sample size in the case of the sample of mothers, measures of effect size are provided in order to evaluate the risk of Type II error (Clark-Carter, 1997). Cohen (1988) defines effect size in terms of Cohen's d , which was calculated from the mean and standard deviation for ratings of worry about behaviours for boys versus ratings for girls. Cohen categorises effect size in the following way: $d = .2$ indicates a small effect size, $d = .5$ indicates a medium effect size, and $d = .8$ indicates a large effect size.

Table 13. Summary of Mann Whitney U test results - Mothers

<i>Behaviour Subscale</i>	U	z	N	p	Cohen's d
DSM-IV Symptoms Subscale: Inattentive	416	.047	58	.482*	.066
DSM-IV Symptoms Subscale: Hyperactive-impulsive	378	.402	57	.344*	.2**
Conners' Global Index: Restless-impulsive	407	.382	59	.351*	.2**
Oppositional Subscale	336	.419	54	.338*	.001

* $p > \alpha$ of .05, therefore not significant

** indicates a small effect size

The statistical analyses show no significant difference in mothers' ratings of concern about inattentive, hyperactive-impulsive, restless-impulsive or oppositional behaviours for boys compared with girls.

3.6.2.1 Type II Error and Effect Size

The power of a statistical test is defined as the probability of avoiding a Type II error – rejecting the research hypothesis when it is in fact true (Clark-Carter, 1997). The power of a test is affected by the sample size. The prospective power analysis (outlined in section 2.4.2 of the Method section) indicated that a sample of 100 mothers would be needed to achieve 80% (.8) power. As the sample size achieved was below this, the power efficiency of the Mann-Whitney U test used in the current study was calculated. With the total N of

61 (ratings for boys $N = 33$, ratings for girls $N = 28$), the power to detect a medium effect size was 57% (.57). This meant that, in the case of the sample of mothers, the statistical tests used had relatively low power. In this study, the power refers to the ability of the Mann-Whitney U test to detect a significant difference (if it exists) between mothers' mean ratings of concern about behaviours for boys compared to girls. The power level of .57 meant that the Mann-Whitney U test only had a 57% chance of detecting this difference, if it were there.

Analysis of the data from the sample of mothers showed no significant differences between mothers' ratings of concern for boys and girls on any of the four subscales. In the case of mothers' average subscale scores on the DSM-IV Symptoms Subscale: Inattentive and Oppositional Subscale, there was an extremely small effect size, suggesting that the absence of a significant result was unlikely to be attributable to limited power due to the small sample size. However, analyses of mothers' scores on the DSM-IV Symptoms Subscale: Hyperactive-impulsive and Conners' Global Index: Restless-impulsive, revealed a small effect size ($d = .2$), in the direction of higher ratings for boys. This suggests that the absence of significance may have been due to limited power, although the effect was opposite to the predicted direction of higher ratings for girls.

3.7 Results in Relation to Hypotheses

3.7.1 Teachers

The results from the sample of teachers ($N = 46$) in relation to Hypotheses 1-4 are presented in Table 14. All four of the hypotheses were supported, as teachers' average ratings of concern about behaviours relating to the key features of ADHD, and co-occurring oppositional behaviours, were significantly higher for boys than for girls. This was in the predicted direction of the one-tailed hypotheses.

Table 14. Results from the sample of teachers in relation to the hypotheses.

Hypothesis	Outcome	Comments
H₁ Inattentive behaviours will be rated as more worrying when female teachers are rating a boy than when they are rating a girl.	Supported	This hypothesis was supported as teachers' average subscale scores for behaviours comprising the DSM-IV Symptoms Subscale: Inattentive were significantly higher when they were considering a boy, compared with a girl.
H₂ Hyperactive behaviours will be rated as more worrying when female teachers are rating a boy than when they are rating a girl.	Supported	This hypothesis was supported as teachers' average subscale scores for behaviours comprising the DSM-IV Symptoms Subscale: Hyperactive-impulsive were significantly higher when they were considering a boy, compared with a girl.
H₃ Impulsive behaviours will be rated as more worrying when female teachers are rating a boy than when they are rating a girl.	Supported	This hypothesis was supported as teachers' average subscale scores for behaviours comprising Conners' Global Index: Restless-impulsive were significantly higher when they were considering a boy, compared with a girl.
H₄ Oppositional behaviours will be rated as more worrying when female teachers are rating a boy than when they are rating a girl.	Supported	This hypothesis was supported as teachers' average subscale scores for behaviours comprising the Oppositional Subscale were significantly higher when they were considering a boy, compared with a girl.

3.7.2 Mothers

The results from the sample of mothers ($N = 61$) in relation to Hypotheses 5-8 are presented in Table 15. None of the four hypotheses were supported, as mothers' average ratings of concern about behaviours relating to the key features of ADHD, and co-occurring oppositional behaviours, were not significantly different for boys and girls. Two small effect sizes were found in relation to hyperactive and impulsive behaviours, in the opposite direction to that predicted – in the direction of higher scores for boys. As discussed in the Discussion section, this may be due to the perception that when boys show these types of behaviour they are likely to be more extreme and disruptive than when shown by girls.

Table 15. Results from the sample of mothers in relation to the hypotheses.

Hypothesis	Outcome	Comments
H₅ Inattentive behaviours will be rated as more worrying when female teachers are rating a girl than when they are rating a boy.	Not supported	This hypothesis was not supported as mothers' average subscale scores for behaviours comprising the DSM-IV Symptoms Subscale: Inattentive did not differ significantly for boys and girls.
H₆ Hyperactive behaviours will be rated as more worrying when female teachers are rating a girl than when they are rating a boy.	Not supported	This hypothesis was not supported as mothers' average subscale scores for behaviours comprising the DSM-IV Symptoms Subscale: Hyperactive-impulsive did not differ significantly for boys and girls. A small effect size was detected, in the opposite direction of that predicted by H ₆ – in the direction of slightly higher scores for boys.
H₇ Impulsive behaviours will be rated as more worrying when female teachers are rating a girl than when they are rating a boy.	Not supported	This hypothesis was not supported as mothers' average subscale scores for behaviours comprising Conners' Global Index: Restless-impulsive did not differ significantly for boys and girls. A small effect size was detected, in the opposite direction of that predicted by H ₆ – in the direction of slightly higher scores for boys.
H₈ Oppositional behaviours will be rated as more worrying when female teachers are rating a girl than when they are rating a boy.	Not supported	This hypothesis was not supported as mothers' average subscale scores for behaviours comprising the Oppositional Subscale did not differ significantly for boys and girls.

3.8 Post-hoc Analyses

3.8.1 Teachers

As presented in section 3.6.1, teachers' ratings of concern about behaviours relating to the DSM-IV Symptoms Subscale: Inattentive, DSM-IV Symptoms Subscale: Hyperactive-impulsive, Conners' Global Index: Restless-impulsive, and Oppositional Subscale, were found to be significantly higher for boys than for girls. Teachers also gave ratings on the Horn Anxiety Rating Scale for behaviours relating to a further seven subscales (see Appendix C for items relating to each of these subscales). In order to determine whether or not the pattern of higher ratings for boys was present in relation to other behaviours, teachers' ratings of concern about the behaviours relating to the other seven subscales were also analysed, using Wilcoxon's Matched-Pairs Signed Ranks Tests. The results of these analyses are presented in table 16. All were two-tailed analyses, as the direction of any differences detected between ratings for boys and girls was not predicted. Alpha (α) was set to .05.

Table 16. Post-hoc analyses of teachers' ratings for subscales on the CTRS-R:L.

<i>Subscale</i>	<i>M (SD)</i>		<i>z</i>	<i>N-Ties</i>	<i>P</i>
	Boys	Girls			
Cognitive Problems/Inattention	7.76 (2.34)	6.91 (2.08)	2.193	30	.028*
Hyperactivity	9.27 (2.69)	8.52 (2.88)	1.929	31	.054
Anxious-shy	7.24 (2.27)	6.33 (2.55)	2.609	32	.009*
Perfectionism	6.75 (3.07)	6.09 (3.24)	1.736	29	.083
Social problems	8.23 (2.41)	7.53 (2.43)	2.429	32	.015*
Conners' Global Index: Emotional lability	7.38 (1.96)	6.72 (2.05)	2.415	36	.016*
ADHD Index	15.14 (4.93)	13.50 (4.37)	2.624	32	.009*

* $p < .05$, therefore significant

Teachers' ratings of concern were significantly higher for boys for behaviours relating to the ADHD construct – Cognitive problems/inattention, and ADHD Index. In addition, teachers' ratings of concern about behaviours relating to the Hyperactivity subscale were approaching significance ($p = .054$), in the direction of higher ratings for boys.

Teachers' ratings of concern were also significantly higher for boys for anxious-shy behaviours, social problems, and emotional lability.

3.8.2 Mothers

As presented in section 3.6.2, mothers' ratings of concern about behaviours relating to the DSM-IV Symptoms Subscale: Inattentive, DSM-IV Symptoms Subscale: Hyperactive-impulsive, Conners' Global Index: Restless-impulsive, and the Oppositional Subscale were not significantly different for boys and girls. Mothers also gave ratings on the Horn Anxiety Rating Scale for behaviours relating to a further eight subscales (see Appendix C for items relating to each of these subscales). Mothers' ratings of concern about the behaviours relating to these eight subscales were also analysed, using the Mann-Whitney U Test. The results of these analyses are presented in table 17. All were two-tailed analyses, as the direction of any differences detected between ratings for boys and girls was not predicted. Alpha (α) was set to .05.

Mothers' ratings of concern were not significantly different for boys and girls for any of these subscales.

Table 17. Post-hoc analyses of mothers' ratings for subscales on the Horn Anxiety Rating Scale.

<i>Subscale</i>	<i>M (SD)</i>		U	<i>N</i> ₁ M	<i>N</i> ₂ F	<i>p</i>
	Boys	Girls				
Cognitive Problems/Inattention	14.97 (7.31)	15.12 (7.04)	403	32	26	.84*
Hyperactivity	11.81 (5.63)	10.51 (5.35)	399	32	27	.61*
Anxious-shy	12.06 (5.09)	12.11 (4.58)	444	33	27	.98*
Perfectionism	8.84 (5.02)	8.82 (4.11)	440	32	28	.90*
Social problems	9.48 (3.15)	9.75 (2.94)	410	31	28	.71*
Psychosomatic	10.03 (4.27)	9.50 (3.86)	406	33	26	.72*
Conners' Global Index: Emotional lability	5.09 (1.96)	4.89 (2.11)	427	32	28	.75*
ADHD Index	14.16 (7.37)	13.85 (6.63)	387	31	26	.79*

* $p = > .05$ for all subscales, therefore not significant

3.9 Summary of Results

Teachers' ratings of concern about the core features of ADHD - inattentive, hyperactive, and impulsive behaviours – were significantly higher when they were considering a boy compared with a girl. Teachers' ratings of concern about oppositional behaviours, which frequently co-occur alongside ADHD, were also significantly higher for boys. These results confirmed hypotheses 1-4, predicting that teachers' ratings would be higher for boys than for girls. Post-hoc analyses indicated that teachers' ratings were also significantly higher for boys, not just for those subscales with items associated with ADHD, such as Cognitive problems/inattention and the ADHD index, but also for Anxious-shy, Social Problems, and Emotional Lability.

Mothers' ratings of concern about the core features of ADHD were not significantly different for boys and girls. Hypotheses 5-7 were therefore not supported, as it was predicted that mothers' ratings would be higher for girls than for boys. In the case of Hyperactive-impulsive, and Restless-impulsive behaviours, however, a small effect size indicated that this might have been due to the failure of the statistical test to detect a difference due to low power because of the small sample size. Mothers' ratings of concern about oppositional behaviours, which frequently co-occur alongside ADHD, were also not significantly different for boys and girls. Hypothesis 8 was therefore not supported, as it was predicted that mothers' scores would be higher for girls than for boys. Post-hoc analyses revealed no significant difference between mothers' ratings of concern for boys and girls on any other behaviour subscales.

Teachers and mothers had very similar mean ratings of concern for items on the DSM-IV Symptoms Subscale: Inattentive, both being slightly higher for boys than for girls.

Teachers' mean ratings of concern about hyperactive-impulsive behaviours, however, were higher than the mothers' mean ratings of concern about these behaviours for both boys and girls.

Teachers' mean ratings of concern about hyperactive-impulsive behaviours were higher than their own mean ratings of concern about inattentive behaviours for girls and boys. In contrast, mothers' mean ratings of concern were similar or slightly lower for hyperactive-impulsive behaviours than for inattentive behaviours.

Discussion

4.1 Overview

The current study investigated the influence of gender on teachers' and mothers' ratings of concern about ADHD and oppositional behaviours, and in this chapter the aims of the research, and the research questions will be reiterated. The results of the study will be discussed in relation to previous research findings, and to feedback received from participating teachers. The implications of the results, and the limitations of the study will be examined, and suggestions made for future research.

4.2 Summary of Research Aims and Questions

For a diagnosis of ADHD to be made, a child must be referred for assessment. As children rarely refer themselves, it is usually parents or teachers who decide whether or not a child needs specialist help, and it is, therefore, important to examine the factors that influence their level of concern about particular behaviours (Weisz et al., 1991). It is important to examine the attitudes of parents and teachers towards the behaviours associated with ADHD in order to investigate the reasons for the small numbers of girls with ADHD seen in clinical settings. For this reason, epidemiological studies, such as this, investigating the factors that influence service use are of clear clinical importance (Sayal, Taylor & Beecham, 2003).

When teachers and mothers are presented with identical behaviour patterns and are asked to rate ADHD, and oppositional behaviours on a scale from 'not at all worried' to 'extremely worried', do these ratings differ depending on whether they are asked to rate a boy or a girl?

4.3 Summary of Results

4.3.1 Teachers

Teachers' mean ratings of concern about the core features of ADHD were significantly higher when considering boys. Their mean ratings of concern about oppositional behaviours, which frequently occur alongside ADHD, were also significantly higher for boys. Post-hoc analyses indicated that teachers' ratings were also significantly higher for boys, not only for those subscales with items associated with ADHD, but also for those relating to the Anxious-shy, Social Problems, and Emotional Lability subscales.

4.3.2 Mothers

Mothers' mean ratings of concern about the core features of ADHD were not significantly different for boys and girls. When considering Hyperactive-impulsive, and Restless-impulsive behaviours, however, mothers tended to give higher ratings for boys. Mothers' mean ratings of concern about oppositional behaviours were not significantly different for boys and girls, and post-hoc analyses found no significant differences between mothers' ratings of concern for boys and girls on any of the other behaviour subscales.

4.3.3 DSM-IV Symptoms Subscales

Teachers and mothers had very similar mean ratings of concern for inattentive behaviours, with both being slightly higher for boys than for girls. However teachers' mean ratings of concern about hyperactive-impulsive behaviours were higher than those of mothers for both boys and girls. Teachers' mean ratings of concern about hyperactive-impulsive behaviours were higher than for inattentive behaviours. Mothers' mean ratings were different, and were similar or slightly lower for hyperactive-impulsive behaviours than for inattentive behaviours.

4.4 Discussion in relation to research questions and hypotheses

Researchers have explored some of the possible reasons for the low number of girls with ADHD seen in clinical settings, compared with the numbers of girls with ADHD suggested by epidemiological studies (e.g. Meltzer et al., 2000) and it has been proposed that girls and boys present differently with ADHD. Girls present more frequently with inattentive, *internalising* symptoms (e.g. Broitman, 2001), while boys present more often with hyperactive, impulsive, *externalising* symptoms (e.g. Bierderman, 2002), and this has led to it being hypothesised that the disruptive, externalising behaviour of boys with ADHD means that they are more easily recognised and referred for help (Gershon, 2002).

Researchers have also explored the effect of oppositional or conduct disorders occurring alongside ADHD behaviours (Gaub & Carlson, 1997), and it has been suggested that oppositional behaviours have an effect on the way in which the inattentive, hyperactive, and impulsive behaviours associated with ADHD are perceived and rated. The presence of oppositional behaviours has been found to inflate ratings of the frequency and severity of hyperactive and impulsive behaviours, particularly in boys (Jackson & King, 2004).

It could be that different gender expectations concerning acceptable behaviour patterns lead to a difference, both in the perception of stigma (Bussing et al., 2003), and the reasons to which the behaviour is attributed (Freeman et al., 1997). These could have an effect on help-seeking behaviour and, in the case of girls, could delay or impede steps to obtain professional advice.

The current study aimed to examine the influence of gender on teachers' and mothers' expression of concern about ADHD and comorbid oppositional behaviours. By presenting participants with a fictional child, any *actual* variation in presentation was controlled. The results suggest that, in the case of female teachers, ratings of concern were affected by a number of factors or perceptions:

- a perception that boys have more behaviour problems than girls
- a perception that behaviour problems are different: girls being associated with internalising behaviours and boys with externalising behaviours, and comorbid oppositional behaviours
- gender stereotypes and socialisation, and the effect that this has on help-seeking behaviours

These perceptions influence teachers' assessment of children's problems, and their course of action. These perceptions will now be explored in relation to previous research, and to feedback received from teachers at the end of the research process ($N = 30$, 65% of the sample).

4.4.1 A perception that boys have more behaviour problems than girls

It is perceived by teachers that boys have more behaviour problems in general than girls, and this could be due to a greater male immaturity, which has been a persistent feature in developmental sex differences, where girls have been seen to be more mature than boys at all stages of development (Taylor, 1985). Research into ADHD shows that girls have been found to show lower rates of the inattentive, hyperactive, and impulsive behaviours associated with ADHD (Conners, 2000), and of the oppositional behaviours, which frequently co-occur (APA, 2000). When teachers complete rating scales, girls of all ages appear to have fewer attention problems and less hyperactivity than boys of the same age. McGee et al. (1987), for example, found that boys were rated by teachers as significantly more hyperactive than girls, within a non-referred sample. Girls within a non-clinical

sample have been found to have fewer symptoms not only of ADHD, but also of other externalising problems, including conduct disorder and aggression (e.g., Eme, 1992).

This pattern is replicated in the normative sample used for the CTRS-R:L, which consisted of 965 males and 1,008 females, each of whom was rated by one of their teachers (Conners, 1997). Males scored significantly higher than females on all but two subscales – Anxious-shy, in which no sex differences were found, and Perfectionism, in which females scored significantly higher than males. Similarly, in the normative sample used for the CPRS-R:L, which consisted of 1,235 males and 1,247 females, each of whom was rated by either a parent or guardian, males scored significantly higher than females on all subscales except two, with females scoring significantly higher than males on the Anxious-shy, and Psychosomatic subscales.

The current study, based on a fictional child, found that teachers gave higher ratings of concern about ADHD behaviours for boys than girls, following the pattern of this previous research. Theoretically, the respondents should have been rating their concern in response to equal levels of each behaviour for boys and girls, but teachers expressed more concern about each behaviour in the case of boys. It may be that the frequency with which this behaviour is observed in boys biases the rater's expectations about the anticipated course and consequences of that behaviour, leading to higher ratings of concern. This is supported by discussion with a proportion of the participants following the feedback of the results to schools. Teachers indicated that when they were trying to visualise the fictional children, the behaviours were often more extreme in the case of the boy. They would anticipate a worse prognosis for boys. It is acknowledged that boys and girls of the same chronological age can differ in terms of developmental maturity, and these differences might have influenced teachers' ratings, as their consideration of a 7-year-old boy's behaviour may not have been directly comparable with that of a 7-year-old girl on the Horn Anxiety Rating Scale.

Teachers indicated that they had more experience of seeing ADHD behaviours in boys and, therefore, could bring them to mind more easily. The results of the ADHD Experience questionnaire showed that 40% of the teachers had experience of working with a child with a diagnosis of ADHD, all of whom had been boys. In addition, 66% indicated that they had experience of working with a child with suspected ADHD, again the majority of whom (74%) were boys. As teachers were more familiar with the patterns of behaviours, and the

subsequent outcome for boys, they may have been more likely to express concern in the case of boys. Teachers may have found it more difficult to imagine some of the behaviours in the case of a girl, if they had not observed them previously.

As girls as a group show lower levels of inattention and hyperactivity compared with boys, they have to deviate further away from the behaviour of their peers than boys to attain a 'diagnostic level' of difficulty (Arnold, 1996). When girls do show ADHD behaviours they may be milder than those of their male counterparts as they are starting from a lower baseline. This could explain why fewer girls are detected and referred for professional help. However, in the current study, it appeared that even levels of problem behaviour comparable with those of boys were not considered to be as worrying as in the case of boys. This suggests that the behaviour of girls has to be extremely bad before it is considered to be really problematic. This finding is consistent with previous research, indicating that girls with ADHD from referred samples have levels of ADHD behaviours that are equal to their male counterparts, whilst girls with ADHD from non-referred samples have lower levels (Gaub & Carlson, 1997; Sharp et al., 1999).

4.4.2 A perception that behaviour problems are different in boys and girls

4.4.2.1 Externalising and Internalising Behaviours.

Abikoff et al. (2002) conducted classroom observations of over 500 children with ADHD and matched controls. They found that, compared to girls with ADHD, boys with ADHD had higher rates of aggression, disruption, rule-breaking and other externalising behaviours. These observed differences in behavioural patterns suggest that real gender differences in externalising behaviours could play a role in the different patterns of identification and referral of boys and girls with ADHD.

In this study, teachers' mean ratings of concern about *hyperactive-impulsive* behaviours were higher than their ratings of *inattentive* behaviours. This appears to reflect teachers' increased concern about externalising, disruptive classroom behaviours. Irrespective of gender, hyperactive-impulsive behaviours appeared to be more worrying to teachers than inattention, especially for boys. This is consistent with findings that inattentive ADHD symptoms, such as fidgetiness, tend to draw less attention from adults, regardless of gender (Abikoff et al., 2002).

Those teachers who gave their views reported that they felt that boys generally tended to be louder and more demonstrative in class. They felt that they talked more to boys, and that boys received more attention in the classroom. Teachers' perceptions were that girls tended to be quieter, with boys being more likely to volunteer answers to questions or to be more vocal during class discussions.

4.4.2.2 Aggression and Disruption.

Boys diagnosed with ADHD are likely to exhibit a higher rate of aggressive behaviour in the classroom than girls with ADHD (Hinshaw, 2002). ADHD in girls is often associated with more subtle forms of disruptive behaviour, such as spreading rumours, and excluding individuals from playing games (Hinshaw, 2002). Post-hoc analyses of teachers' ratings of concern for behaviours on the Social Problems Subscale showed that teachers' gave significantly higher ratings for boys. The Social Problems Subscale comprises items that indicate that a child is likely to perceive that they have few friends, is likely to have low self-esteem, and will probably feel more socially detached from their peers (Conners, 2001). Teachers might have associated boys' difficulties on the Social Problems Subscale, with physical, aggressive, and disruptive behaviours, consistent with Hinshaw's (2002) findings, resulting in higher ratings of concern for these behaviours for boys. Berry et al. (1985) found that boys with ADHD were more dominating and physically aggressive towards their friends than girls.

Participating teachers indicated that, as females, they felt more threatened by disruptive behaviours in boys than in girls, and reported that boys were often more likely to become physically confrontational. Hinshaw (2002) found that girls with ADHD differed from gender-specific norms in their rates of *relational* aggression, rather than *physical* aggression. Girls with ADHD, aged between 6-12 years of age, were rated as significantly higher in relational aggression than other girls. Abikoff et al. (2002) also observed that girls with ADHD showed higher rates of *verbal* aggression to children (e.g. teasing or name-calling), three times greater than their peers, and twice as often as boys. But the occurrence of this behaviour was still very low. Abikoff et al. (2002) suggest that the instances of verbal aggression may occur more often during less structured school activities, when adult supervision is minimal, and are harder to detect than acts of overt physical aggression. Teachers might, therefore, be less aware of these behaviours in girls. The overt aggression typically shown by boys appeared to have an influence on teachers' rating of concern about these behaviours, and because these behaviours are typically

observed more frequently in the case of boys, they were rated as more worrying as teachers' have past, often negative, experiences on which to draw. This may have led them to predict a more negative course and outcome of the behaviours in the case of boys, and to give higher ratings of concern. This is supported by the results of the post-hoc analysis of teachers' ratings on Conners' Global Index: Emotional Lability, which consists of four items relating to mood changes and temper outbursts. Teachers' gave significantly higher ratings for these behaviours for boys, reflecting their apprehension about boys' potentially violent and aggressive expression of emotion.

There is a danger that an adult's discomfort with a child's behaviour may lead it to being labelled as abnormal (BPS, 1996). Teachers' unease with the externalising problem behaviour of boys may lead to that behaviour being perceived as more problematic than it actually is, reflected in their elevated expression of concern about identical behaviour in boys, compared to girls.

4.4.2.3 Comorbidity.

Oppositional behaviour among boys has been associated consistently with elevated teacher ratings of hyperactivity and inattentiveness (e.g. Jackson & King, 2004). The frequent co-occurrence of these behaviours may have had a similarly distorting effect on teachers' ratings of concern. As teachers are used to observing these patterns of behaviours together in boys they may rate them as one 'externalising' construct, which may have had a distorting effect on their ratings of concern for all of these behaviours in relation to boys. Maughan, Rowe, Messer, Goodman, and Meltzer (2004), found that, in the majority of studies of clinically referred children with Oppositional and Conduct Disorder examined, boys showed higher rates of Oppositional and Conduct Disorders than girls. In the current study, the higher incidence of verbal and physical aggression associated with boys may have further increased worry and concern, both for the individual child and for the class as a whole, and teachers identified this, and issues of safety as factors for referral. They indicated that disruption from boys can take the form of physical or verbal aggression, whereas for girls this can include chatting to others or failing to listen to instructions. Teachers expressed their concern about disruption for other pupils, in terms of their ability to learn without distraction and interruption. They worried about other children copying externalising behaviours, or by the group dynamics being upset, and considered children's physical safety a priority. Conflict with others may be the deciding factor in whether or not help is sought. Shaywitz, Fletcher and Shaywitz (1994) found that a child's level of

disruptiveness influenced his or her identification as having ADHD. The results of this study support this idea, as the higher level of disruptiveness predicted in the case of boys elevated teachers' ratings of concern about the behaviour, this may in turn lead them to seek assessment or support for that child.

Studies have also shown the frequent co-occurrence of ADHD and anxiety disorders (e.g. Biederman et al., 1991). In this study, post-hoc analyses indicate that teachers gave higher ratings of concern about behaviours relating to the Anxious-Shy subscale for boys. This subscale is made up of items relating to a child having excessive worry or fear, being very sensitive to criticism, and appearing to be shy and withdrawn (Conner, 2001). Again, perhaps these difficulties manifest themselves in ways that are more disruptive in boys in the classroom. Johnston, Pelham, and Murphy (1985) found that in a sample of 607 schoolchildren, boys were found to be more withdrawn as well as more aggressive towards their peers than girls.

4.4.2.4 Experience.

Due to their experience of working with children, possibly across a wide age-range, teachers can compare the behaviour of an individual child with others of a typical age or development. The value of this experience has been recognised by the American Psychiatric Association (APA), for example, who formalised the importance of teacher information in the diagnosis of what was then termed ADD in the DSM-III (APA, 1980). They stated that 'when the reports of teachers and parents conflict, primary consideration should be given to the teacher reports because of greater familiarity with age-appropriate norms' (p43).

Jackson and King (2004) comment that ratings of ADHD and oppositional behaviours could be influenced by the level of experience that a teacher has with children who exhibit these behaviours. They suggest that expectations based on past associations could artificially inflate ratings of hyperactivity and inattentiveness in the case of boys. This is supported by the findings of the current study, which found that past experience inflated teachers' ratings of concern about ADHD and oppositional behaviours for boys.

Stevens, Quittner and Abikoff (1998) also challenge the idea that greater knowledge and experience of ADHD could increase the accuracy of ratings. They found support for the reverse, suggesting that teachers with more experience distort ratings and *over identify* boys rather than *under identify* girls. They tended to rate the child with Oppositional

Disorder as having more inattention and hyperactivity. In this study, the experience of the teachers concerned may have led them to give higher ratings about these behaviours in boys than in girls. As boys present with higher levels of the behaviours associated with ADHD, and tend to present with a more overt, externalising pattern of behaviour, teachers may compare ADHD behaviour in girls with that shown by boys. As a result, the lower levels of ADHD behaviours displayed by girls may not be considered to be so worrying. This view was supported by the findings of this study, as even when presented with identical patterns of behaviour, teachers still gave higher ratings of concern for boys, perhaps assuming that they would be more extreme and severe. This supports the idea that teachers tend to under-recognise ADHD symptoms in girls because the behaviour of girls is less likely to present teachers with behaviour management problems (McGee and Feehan, 1991).

4.4.3 Gender stereotypes and socialisation, and the effect that this has on help-seeking behaviours

According to Francis (2000) there is a tendency in society for males to be socialised in ways that emphasise qualities such as aggression, independence, competition, and activity, while girls are encouraged to display characteristics of co-operation, passivity, and dependence. It is possible that the gender imbalance in ADHD could reflect the tension that boys experience in their struggle to develop masculine identities in environments in which this might be problematic, such as school (see Cooper, 2001). Feedback from the teachers in the current study suggested that there is a perception that parents are more permissive of certain behaviours in boys, such as aggression, than in girls, and that they felt parents tended to be stricter with girls. Their perception was that parents appeared to be proud of a 'tough', 'independent' boy. They believed these ideas to be subconscious, but felt that parents were often working with a different set of rules for boys from those for girls. They recognised these differences in their own beliefs also, stating that they found higher levels of externalising, disruptive behaviours more acceptable and understandable in the case of boys. In a professional context, however, this is more stressful given the large number of boys in a typical class, which may have led to higher ratings of concern.

The teachers in the current study were reluctant for a child to receive a 'label', they were wary of the associated 'stigma' for that child. It may be that, as the behaviours associated with ADHD are perceived to be less common in girls, the 'stigma' is felt to be rather greater in the case of girls, and Bussing et al. (2003) found that parents expressed more

stigma-related barriers to seeking professional help for girls, which included unease that the child was being discussed, or that their parenting was being criticised by others. These perceptions affect help-seeking behaviours, especially as teachers are often the first people to identify a problem in a child's behaviour (Bussing et al., 2003). They felt that it was sometimes they who were pushing for an assessment, without the backing of the parents, as the difficulties were not apparent at home, or not considered to be problematic.

Maybe fewer girls are referred to professional services because comorbid conduct or oppositional behaviours are less frequent in girls with ADHD (Biederman et al., 1999). The results of this study indicate that there are differences in the way in which teachers rate their concern about the behaviours of boys and girls. While it is not entirely clear whether this is due to a bias in the way in which behaviours are rated, or whether due to actual differences in the way in which boys and girls with ADHD behave, this study would suggest that it is the bias in the way behaviours are rated that is the stronger factor, because teachers, when assessing identical behaviour problems, gave significantly higher ratings of concern for boys.

This bias in teachers' perceptions works in favour of boys and against girls in terms of getting professional help. It may not necessarily be the actual presentation, but the expectations behind this lead to the same behaviour being considered to be more worrying in the case of boys than with girls.

4.5 School and Home Settings

This study found that teachers' ratings of concern about behaviours were higher for boys than for girls, but found no significant difference between mothers' ratings of concern for boys and girls.

When comparing teachers' and mothers' ratings of concern about inattentive behaviours, teachers and mothers gave similar ratings of concern, with both being slightly higher for boys than for girls. Teachers' ratings of concern about hyperactive-impulsive behaviours, however, were higher than those of mothers for both boys and girls, with boys being significantly higher.

While mothers are an essential source of information about the child's behaviour in the home setting, the symptoms of ADHD typically worsen in situations that require self-

application, such as the classroom (APA, 1980), and the extent of the child's perceived difficulties can vary according to the demands of the situation. Children who are markedly symptomatic at school may be described as quite average in behaviour by their parents. A child who is easily distracted while performing a structured task in the classroom may be described as average when playing computer games, interacting with peers or while engaged in an unstructured activity (Schachar & Tannock, 2002).

The different pattern of results for mothers and teachers in this study may be due to the different setting in which the child is observed and to the demands placed upon the child. There are very different demands in the classroom, such as tasks to complete, and a number of children with whom to interact. As discussed, a teacher may be more aware of difficulties which are disruptive to other children, and to the classroom situation as a whole. A family may be able to adapt its pattern of living around the child's behavioural needs, which is not possible in a classroom situation. Boys with ADHD have many more associated difficulties, such as conduct problems, while girls may be losing ground academically, but not coupled with conduct and relationship difficulties. Teachers may pick up externalising, behavioural problems more easily than internalising, emotional difficulties.

4.6 Limitations of the study

4.6.1 Sample

A relatively small number of teachers and mothers took part in the study, so the homogeneity of the group in terms of age and ethnicity may be considered a strength. However as the participants were predominantly White British, and in the case of teachers exclusively so, the extent to which the results can then be generalised is limited. Judgments about children's behaviours has been found to be influenced by culture, and substantial and reliable differences in ratings of ADHD symptoms in children have been found among mental health professionals from different countries (*e.g.* Mann et al., 1992).

The mothers who participated were mothers of 7 or 8-year-old children, and this limits any generalisations about the absence of significant differences in their ratings for boys and girls. The behaviours that mothers were asked to rate may have been considered to be indicative as developmentally appropriate for this age group. Because only mothers of Year 3 children were sampled, teachers and mothers were not necessarily comparable in terms of their experience with children across a wider age range. This reflects the real-life

situation in clinical practice where parents generally have limited experience of children, whereas even relatively inexperienced teachers will have come into contact with many.

The study was only able to look at the attitudes of *mothers* and *female* teachers and, as practical and financial constraints made it impossible to access a comparable study of male teachers and fathers. The results might have been different in the case of male teachers, as, arguably, male teachers may have different concerns about behaviour in relation to boys and girls.

4.6.2 Measures

A number of changes were made to the original CRS-R in the development of the Horn Anxiety Rating Scale for the purpose of this study: for example, the descriptions corresponding to the Likert scale were altered slightly. The original description for 1 – ‘Just a little true’ – was changed to ‘Just a little worried’, and the original description for 2 – ‘Pretty much true’ – was changed to ‘Very worried’. As a result, there was a large jump between the qualitative descriptions of 1 – ‘Just a little worried’ and 2 – ‘Very worried’ on the Horn Anxiety Rating Scale. This might have biased the results as the difference between 1 and 2 could be considered to be larger than the difference between 0 – ‘Not at all worried’, and 1 ‘Just a little worried’, or between 2 – ‘Very worried’, and 3 – ‘Extremely worried’. It might have been better to alter ‘Pretty much true’ to ‘Quite worried’, rather than ‘Very worried’.

After data collection, teachers were asked to complete a brief questionnaire asking about their experience of working with children with ADHD. Given that researchers have found that the presence of oppositional behaviours have an influence on the way in which ADHD behaviours are rated (e.g. Abikoff et al., 1993), it would have been useful to ascertain the teachers’ experience of working with children with Oppositional and Conduct Disorders, and that of mothers by including a similar questionnaire for them to complete, but the constraints of the research situation would not allow this.

4.6.3 Methodology

Quite a large number of teachers, during phase 1 of data collection, failed to return completed questionnaires, and feedback from teachers suggested that there was some anxiety about the purpose of the research. Comments, such as ‘is this to find out whether we favour boys or girls?’ and ‘do we get marked on whether or not we are horrible

teachers', suggested a certain amount of apprehension. The reason why the full purpose was not discussed prior to data completion was to avoid biasing the teachers' responses. A more detailed description of the aims of the study, with reassurance about its purpose would have been useful for teachers to receive prior to data collection.

The power of the statistical test was lowered because of the small sample size in the case of mothers. This meant that there was a risk that the lack of significant difference between mothers' ratings for boys and girls may have been due to the failure of the test to detect a difference, rather than to the absence of a difference. However, the extremely small effect sizes for their ratings of behaviours on the DSM-IV Symptoms Subscale: Inattentive, and on the Oppositional Subscale, indicated that the lack of significant difference between ratings for boys and girls was unlikely to be due to low power. In the case of mothers' ratings for behaviours on the DSM-IV Symptoms Subscale: Hyperactive-impulsive, and on the Conners' Global Index: Restless-impulsive, a small effect size was detected, in the direction of higher ratings for boys. It would have been better to have sampled a larger number of mothers so that results could be considered to be more conclusive.

4.7 Implications of the study

Bussing et al. (2003) identified two steps that are necessary for a child with ADHD to receive professional help – labelling of the behaviour as problematic and seeking an evaluation. This study adds to the small but increasing body of literature examining the factors that affect how boys and girls with ADHD are identified and referred for treatment, and highlights the effect that different gender expectations, based on gender differences in the frequency and type of problem behaviours, and gender stereotypes, have on teachers' and mothers' expression of concern about ADHD behaviours. The results support previous research findings based on actual differences in the way in which boys and girls present with ADHD, and indicate that even when these differences are controlled, by presenting raters with identical behaviours, gender biases and stereotypes exert an influence on ratings of concern. The implications of these results will be considered in terms of

- assessment
- treatment
- training and education
- service design.

4.7.1 Assessment

The benefit of using rating scales to aid diagnosis is recognised in terms of providing a simple, easily understood means of gathering information about the nature and severity of a child's behaviour problems from a number of sources (BPS, 1996), but the results of this study suggest that ratings made on scales of this kind are not neutral. The rater is influenced by their previous experience and expectations, particularly in the case of teachers who have experience of a large number of children. The results support the idea that, despite their apparent objectivity, behavioural rating scales are merely a means of quantifying adult opinion (Barkley, 1997), and so should not be used in isolation, but in conjunction with clinical interviews and observations. The different pattern of results for teachers and mothers, in terms of their ratings of concern about behaviours for boys and girls, emphasises the need for the assessor to examine ratings, observations, and opinions from a variety of sources, within a number of settings. Where time and resources allow, the addition of neutral observations within different settings would be invaluable in ascertaining as accurate a picture as possible of a child's difficulties (BPS, 1996). Children may show difficulties with attention and the control of their activity, for a number of reasons, such as disinterest or boredom. Perhaps because of this it is important to ascertain the child's point of view (BPS, 1996).

As previously discussed, the frequency and pattern of behaviour problems may differ for boys and girls, and ratings made in relation to girls may result in lower scores on the Conners' Rating Scale. For this reason, some girls with significant difficulties may be missed. McGee and Feehan (1991) suggest that this phenomenon could be corrected by using gender-specific thresholds of behaviour. This would mean that the behaviour of girls would be compared to that of other girls, rather than to boys, who show higher levels of these behaviours anyway. In this way girls who are currently being missed could reach diagnostic or referral levels of difficulty more easily.

4.7.2 Treatment

Behavioural rating scales do not provide information about the underlying causes of a child's apparent difficulties, and these must be examined as part of the development of appropriate intervention (BPS, 1996). The differences in teachers' and mothers' ratings highlighted in this study give clues about the possible influence of setting in terms of differences in demands or the ability to cope, all of which can inform intervention strategies.

It might be assumed that the ratings for an individual child on a behavioural rating scale result in an individual profile of strengths and difficulties. However they may not be as individual as they first appear. The results of this study indicate that teachers' prior experience with other children can influence and bias their perception as to whether behaviour is problematic, and influence their ratings of concern. It is important for healthcare professionals to be mindful of this, as the importance of an individualised intervention in the case of children with complex difficulties such as ADHD is well documented (*e.g.* BPS, 1996).

It may be that the lower referral rates of girls reflects the nature of their associated difficulties, and Gaub and Carlson's (1997) meta-analysis of 18 studies found that girls with ADHD within clinically referred samples showed higher levels of intellectual impairment than boys with ADHD. It is possible that girls with ADHD are receiving appropriate services at school for the learning problems that they experience, but without the need for additional services to address behavioural problems (Gaub & Carlson, 1997).

4.7.3 Training and Education

Referral agents, such as teachers, must be aware of gender-specific behavioural patterns, and of their potential impact on referral patterns (Abikoff et al., 2002). Individuals completing rating scales could benefit from information about the way in which ADHD manifests itself in girls, and from knowing that when using the Conners' Rating Scales, they need to be mindful that girls' scores might be lower than those of boys with comparable problems.

It has been suggested that referrers may be over-recognising boys, rather than under-recognising girls (Stevens et al., 1998). There needs to be an increased awareness of this, both amongst those referring and those receiving referrals. The results of this study indicate that there are differences in the way in which teachers express concern about problem behaviours in boys compared to girls. Referrers and health professionals need to be made aware of the biases that may exist due to previous experience of boys with ADHD, the increased literature on boys with ADHD, and the more prominent and disruptive way in which they present with ADHD.

Boys and girls with ADHD who meet criteria for ADHD: Predominantly Inattentive subtype are more difficult to recognise, and therefore an enhanced understanding of this

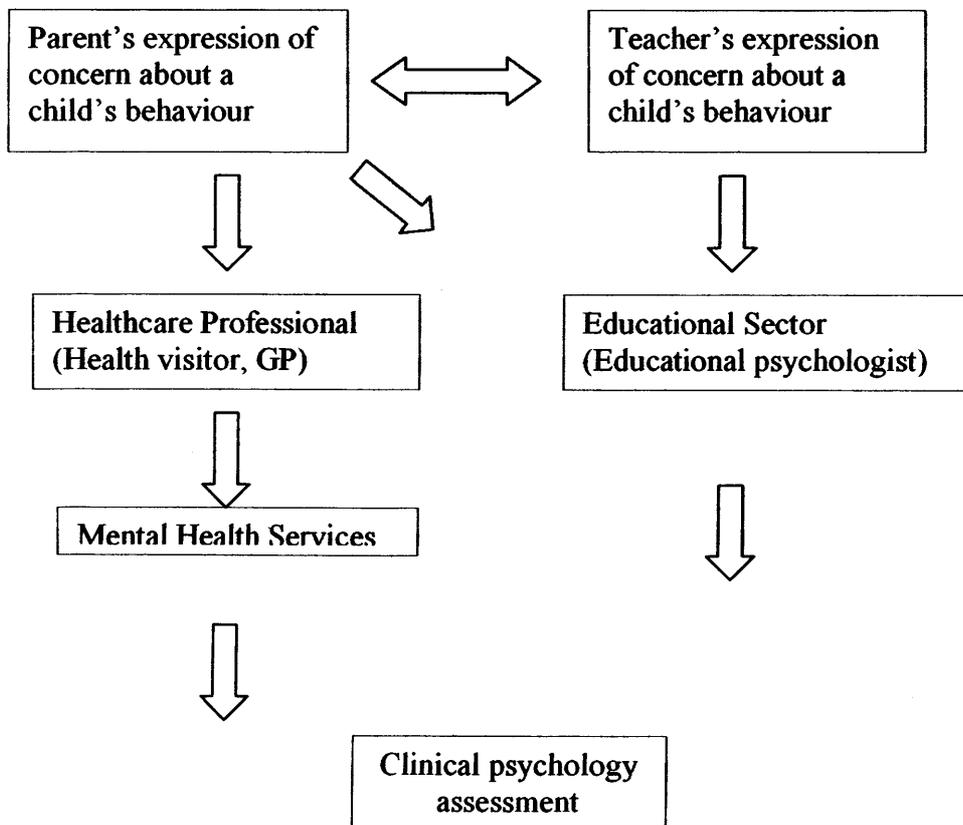
subtype needs to be communicated to both parents and teachers (Gershon, 2002). As girls' difficulties may frequently be attributed to other causes, such as difficulty in intellectual ability, teachers, parents, and clinicians need to be aware that these difficulties may be indicative of other problems, such as ADHD (Gershon, 2002).

Teachers may need additional support within the classroom to cope with boys who show normally high levels of externalising behaviours that become disruptive in the classroom situation.

4.7.4 Service Design

The process of referral once a problem has been recognised by a teacher or parent, or perhaps both, and the main route to an assessment by a clinical psychologist is summarised in *Figure 5*. The implications of this process in terms of the assessment of a child with ADHD will be discussed in relation to the results of the study.

Figure 5. Referral Process



The behaviours associated with ADHD manifest themselves more readily in school, making teacher observation a major consideration in the diagnosis. This makes the communication between health professionals and teachers vital to the diagnosis and treatment of children with ADHD (Wolraich, 1999). This need for interprofessional consultation and cooperation is outlined in the recent green Paper 'Every Child Matters' (Department of Health, 2003), and it is recognised that children with ADHD benefit from an evaluation by a multidisciplinary team (Herbert & Wookey, 2004). It is important for those involved in the process of providing a comprehensive assessment of a child with ADHD to anticipate the different perspectives that may arise, and to integrate the information as accurately as possible.

As already discussed, the perceptions of teachers and parents of a child's difficulties can differ as to their frequency and severity (Hartung et al., 2003). In this study the different perspectives of teachers and mothers appear to extend to their expression of concern about behaviour, which might ultimately reflect differences in help-seeking behaviour, and it appears to be teachers who are more frequently the instigators of the referral process. Engaging the parents in assessment and treatment programmes is vital, however, as they are usually the people who determine whether or not appointments are kept. Many parents are reluctant to initiate treatment as evidenced by a 15-35% no-show rate to first appointments (Kourany, Garber, & Tornusciolo, 1990), and perhaps even more so in the case of girls with ADHD, as indicated by parent's increased perception of 'stigma' (Bussing et al., 2003). This reluctance must be overcome and it is important for services to foster and secure the engagement of the child's family in the assessment and treatment process (Morrissey-Kane & Prinz, 1999), perhaps even more so in the case of ADHD where opinions may differ between sources, and particularly in the case of girls.

4.8 Recommendations for future research

This study examined the influence of gender on teachers' and mothers' ratings of concern about ADHD and oppositional behaviours, and from this the following observations can be made

- teachers gave significantly higher ratings of concern in the case of boys, but as all the teachers sampled were White British, it would be interesting to see whether future studies that included teachers from other ethnic backgrounds replicated these results. This would be particularly interesting in the light of Leicester City's high percentage of ethnic minority groups.
- mothers did not give significantly different ratings for boys and girls, and it is important to establish whether or not this is an accurate conclusion, or whether it was influenced by the small sample size, and by the fact that they were all mothers of Year 3 children. A study examining the ratings of a larger number of mothers across a broader age range of children would probably add to the knowledge base about mothers' concern regarding ADHD behaviours, and this could then be linked to the clinical picture of fewer referrals for girls with ADHD
- all the participants in this study were female, and it would be useful to determine the pattern of ratings of concern in relation to boys and girls made by male teachers and by fathers. This could then be discussed in relation to the pattern of results for female teachers and mothers, and to the pattern of referrals of boys and girls with ADHD
- Useful information was obtained about the influence of perceptions and expectations on ratings of concern about children's behaviour through discussion with a proportion of the teachers about the preliminary results of the statistical analyses. Further research about this would probably lead to a better understanding of the differences in help-seeking behaviours that currently seem to result in a greater number of boys with ADHD being seen in clinical settings.

4.9 Concluding Comments

Boys' difficulties are frequently associated with externalising, aggressive, and disruptive behaviours which increase teachers' perceptions of threat, and this leads to a more negative evaluation of the course and outcome for a boy. Girls' difficulties are associated with more covert disruption, and relationship difficulties, such as spreading rumours, or excluding others from play, and are less likely to present teachers with more obvious behavioural management problems. As girls have to deviate further from their peers to reach the same level of behaviour problems as boys, they are less likely to be noticed or considered a problem.

See *Figure 6* for a summary of the factors influencing teachers' recognition of, interpretation of, and response to a child's ADHD behaviour.

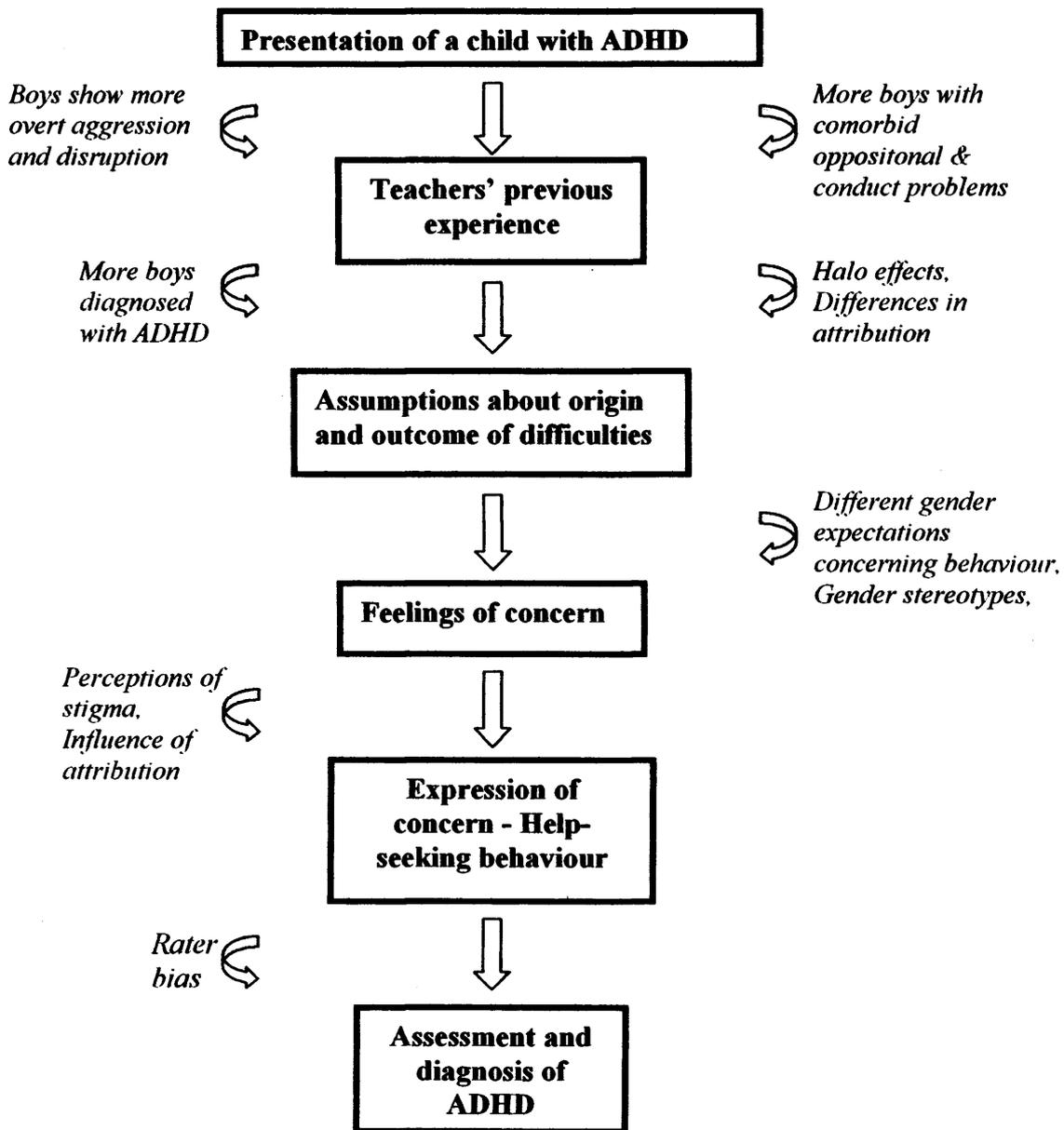
This study emphasises the influence of teachers' past experience of children's behaviour patterns on their appraisal of ADHD behaviour, and the importance for clinicians to be aware of the potential rater bias that exists when evaluating rating scales, and to evaluate a child's behaviour through a number of different means to establish a clear picture.

Information about the typical pattern, and level of severity of girls' ADHD behaviours would be useful for both referral agencies and health care professionals.

The results of this study highlight the importance of multi-disciplinary working, and of establishing good communication between professionals, teachers, and parents in the assessment of ADHD. It is important to remember that the level of concern may be lower for girls but that does not mean that there is not a significantly negative impact upon girls with ADHD in terms of education, family and peer relationships.

In conclusion, this study suggests that it is harder to diagnose girls with ADHD under current circumstances. A re-evaluation would focus professional, and subsequently parental, concerns on a broader range of symptoms. This would allow for a greater more appropriate level of diagnosis in girls, and equally, a lower and more appropriate level of diagnosis in boys.

Figure 6. Factors influencing teachers' recognition of, interpretation of, and response to a child's ADHD behaviour



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Conners' Teacher Rating Scale - Revised (L)

by C. Keith Conners, Ph.D.

Student's Name: _____	Gender: M F <small>(Circle One)</small>
Birthdate: ____/____/____ <small>Month Day Year</small>	Age: _____ School Grade: _____
Teacher's Name: _____	Today's Date: ____/____/____ <small>Month Day Year</small>

Instructions: Below are a number of common problems that children have in school. Please rate each item according to how much of a problem it has been in the last month. For each item, ask yourself "How much of a problem has this been in the last month?", and circle the best answer for each one. If none, not at all, seldom, or very infrequently, you would circle 0. If very much true, or it occurs very often or frequently, you would circle 3. You would circle 1 or 2 for ratings in between. Please respond to all the items.

NOT TRUE AT ALL <small>(Never, Seldom)</small>	JUST A LITTLE TRUE <small>(Occasionally)</small>	PRETTY MUCH TRUE <small>(Often, Quite a Bit)</small>	VERY MUCH TRUE <small>(Very Often, Very Frequent)</small>
--	---	--	---

1. Defiant	0	1	2	3
2. Restless in the "squirmy" sense	0	1	2	3
3. Forgets things he/she has already learned	0	1	2	3
4. Appears to be unaccepted by group	0	1	2	3
5. Feelings easily hurt	0	1	2	3
6. Is a perfectionist	0	1	2	3
7. Temper outbursts; explosive, unpredictable behavior	0	1	2	3
8. Excitable, impulsive	0	1	2	3
9. Fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities	0	1	2	3
10. Sassy	0	1	2	3
11. Is always "on the go" or acts as if driven by a motor	0	1	2	3
12. Avoids, expresses reluctance about, or has difficulties engaging in tasks that require sustained mental effort (such as schoolwork or homework)	0	1	2	3
13. Is one of the last to be picked for teams or games	0	1	2	3
14. Is an emotional child	0	1	2	3
15. Everything must be just so	0	1	2	3
16. Restless or overactive	0	1	2	3
17. Fails to finish things he/she starts	0	1	2	3
18. Does not seem to listen to what is being said to him/her	0	1	2	3
19. Actively defies or refuses to comply with adults' requests	0	1	2	3
20. Leaves seat in classroom or in other situations in which remaining seated is expected	0	1	2	3
21. Poor in spelling	0	1	2	3
22. Has no friends	0	1	2	3
23. Timid, easily frightened	0	1	2	3
24. Keeps checking things over and over	0	1	2	3
25. Cries often and easily	0	1	2	3
26. Inattentive, easily distracted	0	1	2	3
27. Has difficulty organizing tasks or activities	0	1	2	3
28. Has difficulty sustaining attention in tasks or play activities	0	1	2	3
29. Has difficulty waiting his/her turn	0	1	2	3
30. Not reading up to par	0	1	2	3

Items continued on back page...

Conners' Teacher Rating Scale - Revised (L)

by C. Keith Conners, Ph.D.

	NOT TRUE AT ALL (Never, Seldom)	JUST A LITTLE TRUE (Occasionally)	PRETTY MUCH TRUE (Often, Quite a Bit)	VERY MUCH TRUE (Very Often, Very Frequent)
31. Does not know how to make friends	0	1	2	3
32. Sensitive to criticism	0	1	2	3
33. Seems over-focused on details	0	1	2	3
34. Fidgeting	0	1	2	3
35. Disturbs other children	0	1	2	3
36. Talks excessively	0	1	2	3
37. Argues with adults	0	1	2	3
38. Cannot remain still	0	1	2	3
39. Runs about or climbs excessively in situations where it is inappropriate.....	0	1	2	3
40. Lacks interest in schoolwork	0	1	2	3
41. Has poor social skills	0	1	2	3
42. Has difficulty playing or engaging in leisure activities quietly	0	1	2	3
43. Likes everything neat and clean	0	1	2	3
44. Fidgets with hands or feet or squirms in seat.....	0	1	2	3
45. Demands must be met immediately—easily frustrated	0	1	2	3
46. Blurts out answers to questions before the questions have been completed	0	1	2	3
47. Spiteful or vindictive.....	0	1	2	3
48. Short attention span	0	1	2	3
49. Loses things necessary for tasks or activities (e.g., school assignments, pencils, books, tools, or toys)	0	1	2	3
50. Only pays attention to things he/she is really interested in	0	1	2	3
51. Shy, withdrawn	0	1	2	3
52. Distractibility or attention span a problem.....	0	1	2	3
53. Things must be done the same way every time	0	1	2	3
54. Mood changes quickly and drastically	0	1	2	3
55. Interrupts or intrudes on others (e.g., butts into others' conversations or games)	0	1	2	3
56. Poor in arithmetic	0	1	2	3
57. Does not follow through on instructions and fails to finish schoolwork (not due to oppositional behavior or failure to understand instructions)	0	1	2	3
58. Easily distracted by extraneous stimuli	0	1	2	3
59. Restless, always up and on the go	0	1	2	3

Conners' Parent Rating Scale - Revised (L)

by C. Keith Conners, Ph.D.

Child's Name: _____ Gender: **M** **F**
(Circle One)

Birthdate: ____/____/____ Age: ____ School Grade: ____
Month Day Year

Parent's Name: _____ Today's Date: ____/____/____
Month Day Year

Instructions: Below are a number of common problems that children have. Please rate each item according to your child's behavior in the last month. For each item, ask yourself "How much of a problem has this been in the last month?", and circle the best answer for each one. If none, not at all, seldom, or very infrequently, you would circle 0. If very much true, or it occurs very often or frequently, you would circle 3. You would circle 1 or 2 for ratings in between. Please respond to all the items.

NOT TRUE AT ALL (Never, Seldom)	JUST A LITTLE TRUE (Occasionally)	PRETTY MUCH TRUE (Often, Quite a Bit)	VERY MUCH TRUE (Very Often, Very Frequent)
--	--	--	---

1. Angry and resentful	0	1	2	3
2. Difficulty doing or completing homework	0	1	2	3
3. Is always "on the go" or acts as if driven by a motor	0	1	2	3
4. Timid, easily frightened	0	1	2	3
5. Everything must be just so	0	1	2	3
6. Has no friends	0	1	2	3
7. Stomach aches	0	1	2	3
8. Fights	0	1	2	3
9. Avoids, expresses reluctance about, or has difficulties engaging in tasks that require sustained mental effort (such as schoolwork or homework)	0	1	2	3
10. Has difficulty sustaining attention in tasks or play activities	0	1	2	3
11. Argues with adults	0	1	2	3
12. Fails to complete assignments	0	1	2	3
13. Hard to control in malls or while grocery shopping	0	1	2	3
14. Afraid of people	0	1	2	3
15. Keeps checking things over again and again	0	1	2	3
16. Loses friends quickly	0	1	2	3
17. Aches and pains	0	1	2	3
18. Restless or overactive	0	1	2	3
19. Has trouble concentrating in class	0	1	2	3
20. Does not seem to listen to what is being said to him/her	0	1	2	3
21. Loses temper	0	1	2	3
22. Needs close supervision to get through assignments	0	1	2	3
23. Runs about or climbs excessively in situations where it is inappropriate	0	1	2	3
24. Afraid of new situations	0	1	2	3
25. Fussy about cleanliness	0	1	2	3
26. Does not know how to make friends	0	1	2	3
27. Gets aches and pains or stomachaches before school	0	1	2	3
28. Excitable, impulsive	0	1	2	3
29. Does not follow through on instructions and fails to finish schoolwork, chores or duties in the workplace (not due to oppositional behavior or failure to understand instructions)	0	1	2	3
30. Has difficulty organizing tasks and activities	0	1	2	3
31. Irritable	0	1	2	3
32. Restless in the "squirmy sense"	0	1	2	3
33. Afraid of being alone	0	1	2	3
34. Things must be done the same way every time	0	1	2	3
35. Does not get invited over to friends' houses	0	1	2	3
36. Headaches	0	1	2	3
37. Fails to finish things he/she starts	0	1	2	3

Items continued on back page...

Conners' Parent Rating Scale - Revised (L)

by C. Keith Conners, Ph.D.

	NOT TRUE AT ALL. (Never, Seldom)	JUST A LITTLE TRUE (Occasionally)	PRETTY MUCH TRUE (Often, Quite a Bit)	VERY MUCH TRUE (Very Often, Very Frequent)
38. Inattentive, easily distracted	0	1	2	3
39. Talks excessively	0	1	2	3
40. Actively defies or refuses to comply with adults' requests	0	1	2	3
41. Fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities	0	1	2	3
42. Has difficulty waiting in lines or awaiting turn in games or group situations	0	1	2	3
43. Has a lot of fears	0	1	2	3
44. Has rituals that he/she must go through	0	1	2	3
45. Distractibility or attention span a problem	0	1	2	3
46. Complains about being sick even when nothing is wrong	0	1	2	3
47. Temper outbursts	0	1	2	3
48. Gets distracted when given instructions to do something	0	1	2	3
49. Interrupts or intrudes on others (e.g., butts into others' conversations or games)	0	1	2	3
50. Forgetful in daily activities	0	1	2	3
51. Cannot grasp arithmetic	0	1	2	3
52. Will run around between mouthfuls at meals	0	1	2	3
53. Afraid of the dark, animals, or bugs	0	1	2	3
54. Sets very high goals for self	0	1	2	3
55. Fidgets with hands or feet or squirms in seat	0	1	2	3
56. Short attention span	0	1	2	3
57. Touchy or easily annoyed by others	0	1	2	3
58. Has sloppy handwriting	0	1	2	3
59. Has difficulty playing or engaging in leisure activities quietly	0	1	2	3
60. Shy, withdrawn	0	1	2	3
61. Blames others for his/her mistakes or misbehavior	0	1	2	3
62. Fidgeting	0	1	2	3
63. Messy or disorganized at home or school	0	1	2	3
64. Gets upset if someone rearranges his/her things	0	1	2	3
65. Clings to parents or other adults	0	1	2	3
66. Disturbs other children	0	1	2	3
67. Deliberately does things that annoy other people	0	1	2	3
68. Demands must be met immediately — easily frustrated	0	1	2	3
69. Only attends if it is something he/she is very interested in	0	1	2	3
70. Spiteful or vindictive	0	1	2	3
71. Loses things necessary for tasks or activities (e.g., school assignments, pencils, books, tools or toys)	0	1	2	3
72. Feels inferior to others	0	1	2	3
73. Seems tired or slowed down all the time	0	1	2	3
74. Spelling is poor	0	1	2	3
75. Cries often and easily	0	1	2	3
76. Leaves seat in classroom or in other situations in which remaining seated is expected ...	0	1	2	3
77. Mood changes quickly and drastically	0	1	2	3
78. Easily frustrated in efforts	0	1	2	3
79. Easily distracted by extraneous stimuli	0	1	2	3
80. Blurts out answers to questions before the questions have been completed	0	1	2	3

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Appendix C Items relating to each subscale on the CPRS-R:L and the CTRS-R:L

	CPRS-R:L	CTRS-R:L
A. Oppositional	1. Angry and resentful 8. Fights 11. Argues with adults 21. Loses temper 31. Irritable 40. Actively defies or refuses to comply with adults' requests 57. Touchy or easily annoyed by others 61. Blames others for his/her mistakes or misbehaviour 67. Deliberately does things that annoy other people 70. Spiteful or vindictive	1. Defiant 7. Temper outbursts: explosive, unpredictable behaviour 10. Sassy 19. Actively defies or refuses to comply with adults' requests 37. Argues with adults 47. Spiteful or vindictive
B. Cognitive Problems/ Inattention	2. Difficulty doing or completing homework 9. Avoids, expresses reluctance about, or has difficulty engaging in tasks that require sustained mental effort 12. Fails to complete assignments 19. Has trouble concentrating in class 22. Needs close supervision to get through assignments 29. Does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace 41. Fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities 50. Forgetful in daily activities 51. Cannot grasp arithmetic 58. Has sloppy handwriting 71. Loses things necessary for tasks or activities 74. Spelling is poor	3. Forgets things he/she has already learned 12. Avoids, expresses reluctance about, or has difficulty engaging in tasks that require sustained mental effort 17. Fails to finish things he/she starts 21. Poor in spelling 30. Reading not up to par 40. Lacks interest in schoolwork
C. Hyperactivity	3. Is always 'on the go' or acts as if driven by a motor 13. Hard to control in malls or while grocery shopping 23. Runs about or climbs excessively in situations where it is inappropriate 28. Excitable, impulsive 32. Restless in the 'squirmy sense' 42. Has difficulty waiting in lines or awaiting turn in games or group situations 52. Will run around between mouthfuls at meals 59. Has difficulty playing or engaging in leisure activities quietly 80. Blurts out answers to questions before the questions have been completed	2. Restless in the 'squirmy sense' 8. Excitable, impulsive 11. Is always 'on the go' or acts as if driven by a motor 20. Leaves seat in classroom or in other situations in which remaining seated is expected 29. Has difficulty waiting in lines or awaiting turn in games or group situations 39. Runs about or climbs excessively in situations where it is inappropriate 42. Has difficulty playing or engaging in leisure activities quietly
D. Anxious-Shy	4. Timid, easily frightened 14. Afraid of people 24. Afraid of new situations 33. Afraid of being alone 43. Has a lot of fears 53. Afraid of the dark, animals, or bugs 60. Shy, withdrawn	5. Feelings easily hurt 14. Is an emotional child 23. Timid, easily frightened 25. Cries often and easily 32. Sensitive to criticism 51. Shy, withdrawn

E. Perfectionism	65. Clings to parents or other adults	6. Is a perfectionist
	5. Everything must be just so	15. Everything must be just so
	15. Keeps checking things over again and again	24. Keeps checking things over again and again
	25. Fussy about cleanliness	33. Seems over-focused on detail
	34. Things must be done the same way every time	43. Likes everything neat and clean
F. Social Problems	44. Has rituals that he/she must go through	53. Things must be done the same way every time
	54. Sets very high goals for self	
	64. gets upset if someone rearranges his/her things	
	6. Has no friends	4. Appears to be unaccepted by group
	16. Loses friends quickly	13. Is the last one to be picked for teams or games
G. Psychosomatic	26. Doesn't know how to make friends	22. Has no friends
	35. Doesn't get invited to friends' houses	31. Doesn't know how to make friends
	72. Feels inferior to others	41. Has poor social skills
	7. Stomach aches	-
	17. Aches and pains	-
H. ADHD Index	27. Gets aches and pains or stomachaches before school	-
	36. Headaches	-
	46. Complains about being sick even when nothing is wrong	-
	73. Tired or slowed down all the time	-
	9. Avoids, expresses reluctance about, or has difficulty engaging in tasks that require sustained mental effort	8. Excitable, impulsive
I. Conners' Global Index: Restless-Impulsive	19. Has trouble concentrating in class	17. Fails to finish things he/she starts
	29. Does not follow through on instructions and fails to finish schoolwork, chores or duties in the workplace	26. Inattentive, easily distracted
	38. Inattentive, easily distracted	35. Disturbs other children
	45. Distractibility or attention span a problem	38. Cannot remain still
	48. Gets distracted when given instructions to do something	44. Fidgets with hands or feet or squirms in seat
I. Conners' Global Index: Restless-Impulsive	55. Fidgets with hands or feet or squirms in seat	48. Short attention span
	56. Short attention span	50. Only pays attention to things he/she is really interested in
	63. Messy or disorganised at home or school	52. Distractibility or attention span a problem
	69. Only attends if it is something he or she is interested in	55. Interrupts or intrudes on others
	76. Leaves seat in classroom or in other situations in which remaining seated is expected	57. Does not follow through on instructions and fails to finish schoolwork, chores or duties in the workplace
I. Conners' Global Index: Restless-Impulsive	78. Easily frustrated in efforts	59. Restless, always up and on the go
	18. Restless or overactive	8. Excitable, impulsive
	28. Excitable, impulsive	16. Restless or overactive
	37. Fails to finish things he/she starts	17. Fails to finish things he/she starts
	38. Inattentive, easily distracted	26. Inattentive, easily distracted
I. Conners' Global Index: Restless-Impulsive	62. Fidgeting	34. Fidgeting
	66. Disturbs other children	35. Disturbs other children
	68. Demands must be met immediately – easily frustrated	

J. Conners' Global Index: Emotional Lability

47. Temper outbursts
75. Cries often and easily
77. Mood changes quickly and drastically

7. Temper outbursts: explosive, unpredictable behaviour
25. Cries often and easily
45. Demands must be met immediately – easily frustrated
54. Mood changes quickly...

K. Conners' Global Index: Total

Total I & J

Total I & J

L. DSM-IV Symptoms subscales: Inattentive

9. Avoids, expresses reluctance about , or has difficulties engaging in tasks that require sustained mental effort
10. Has difficulty sustaining attention in tasks or play activities
20. Does not seem to listen to what is being said to him/her
29. Does not follow through on instructions and fails to finish schoolwork, chores or duties in the workplace
30. Has difficulties organising tasks and activities
41. Fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities
50. Forgetful in daily activities
71. Loses things necessary for tasks or activities
79. Easily distracted by extraneous stimuli

3. Forgets things he/she has already learned
9. Fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities
12. Avoids, expresses reluctance about , or has difficulties engaging in tasks that require sustained mental effort
18. Does not seem to listen to what is being said to him/her
27. Has difficulty organising tasks and activities
28. Has difficulty sustaining attention in tasks or play activities
49. Loses things necessary for tasks or activities
57. Does not follow through on instructions and fails to finish schoolwork, chores or duties in the workplace
58. Easily distracted by extraneous stimuli

M. DSM-IV Symptoms Subscales: Hyperactivity Index

3. Is always on the go or acts as if driven by a motor
23. Runs about or climbs excessively in situations where it is inappropriate
39. Talks excessively
42. Has difficulty waiting in lines or awaiting turn in games or group situations
49. interrupts or intrudes on others
55. Fidgets
59. Has difficulty playing or engaging in leisure activities quietly
76. Leaves seat in classroom or other situations in which remaining seated is expected
80. Blurts out answers to questions before the questions have been completed

11. Is always on the go or acts as if driven by a motor
20. Leaves seat in classroom or other situations in which remaining seated is expected
29. Has difficulty waiting in lines or awaiting turn in games or group situations
36. Talks excessively
39. Runs about or climbs excessively in situations where it is inappropriate
42. Has difficulty playing or engaging in leisure activities quietly
44. Fidgets
46. Blurts out answers to questions before the questions have been completed
55. Interrupts or intrudes on others

N. DSM-IV Symptoms Subscales: Total

Total L & M

Total L & M

Appendix D

Horn Anxiety Rating Scale – Teacher (boy)

Below are a number of common problems that children have.

Imagine a 7-year-old boy displaying each of the behaviours listed.

For each item, ask yourself “how worried would I be about a 7-year-old boy displaying this behaviour?” Circle the answer that fits best for each one (only circle one response).

- If you would not be worried at all, you would circle 0
- If you would be a little bit worried, you would circle 1
- If you would be very worried, you would circle 2
- If you would be extremely worried, you would circle 3

		Not at all worried	Just a little worried	Very worried	Extremely worried
1	He is defiant	0	1	2	3
2	He is restless or “squirmy”	0	1	2	3
3	He forgets things he has already learned	0	1	2	3
4	He appears to be unaccepted by the group	0	1	2	3
5	His feelings are easily hurt	0	1	2	3
6	He is a perfectionist	0	1	2	3
7	He has temper outbursts; explosive, unpredictable behaviour	0	1	2	3
8	He is excitable, impulsive	0	1	2	3
9	He fails to give close attention to details or makes careless mistakes in schoolwork or other activities	0	1	2	3
10	He is cheeky	0	1	2	3
11	He is always “on the go” or acts as if driven by a motor	0	1	2	3
12	He avoids or has difficulties with tasks that require sustained mental effort (such as schoolwork or homework)	0	1	2	3
13	He is one of the last to be picked for teams or games	0	1	2	3
14	He is an emotional child	0	1	2	3
15	Everything must be just so	0	1	2	3
16	He is restless or overactive	0	1	2	3
17	He fails to finish things he starts	0	1	2	3
18	He does not seem to listen to what is being said to him	0	1	2	3
19	He actively defies or refuses to comply with adults’ requests	0	1	2	3
20	He leaves his seat in classroom or in other situations in which remaining seated is expected	0	1	2	3
21	He is poor in spelling	0	1	2	3
22	He has no friends	0	1	2	3
23	He is timid, easily frightened	0	1	2	3
24	He keeps checking things over and over	0	1	2	3
25	He cries often and easily	0	1	2	3
26	He is inattentive, easily distracted	0	1	2	3
27	He has difficulty organising tasks or activities	0	1	2	3
28	He has difficulty sustaining attention in tasks or play activities	0	1	2	3
29	He has difficulty waiting his turn	0	1	2	3
30	His reading is not as good as you would expect for someone of his age	0	1	2	3
31	He does not know how to make friends	0	1	2	3
32	He is sensitive to criticism	0	1	2	3
33	He seems over-focused on details	0	1	2	3
34	He fidgets	0	1	2	3
35	He disturbs other children	0	1	2	3
36	He talks excessively	0	1	2	3
37	He argues with adults	0	1	2	3
38	He cannot remain still	0	1	2	3
Items continued overleaf					

		Not at all worried	Just a little worried	Very worried	Extremely worried
40	He lacks interest in schoolwork	0	1	2	3
41	He has poor social skills	0	1	2	3
42	He has difficulty playing or engaging in leisure activities quietly	0	1	2	3
43	He likes everything neat and clean	0	1	2	3
44	He fidgets with hands or feet or squirms in seat	0	1	2	3
45	Demands must be met immediately – easily frustrated	0	1	2	3
46	He blurts out answers to questions before the questions have been completed	0	1	2	3
47	He is spiteful or vindictive	0	1	2	3
48	He has a short attention span	0	1	2	3
49	He loses things necessary for tasks or activities (e.g. school projects, pencils, books or toys)	0	1	2	3
50	He only pays attention to things that he is really interested in	0	1	2	3
51	He is shy, withdrawn	0	1	2	3
52	He has a short attention span	0	1	2	3
53	Things must be done the same way every time	0	1	2	3
54	His mood changes quickly and drastically	0	1	2	3
55	He interrupts or intrudes on others (e.g. butts into others' conversations or games)	0	1	2	3
56	He is poor in arithmetic	0	1	2	3
57	He does not follow through on instructions and fails to finish schoolwork	0	1	2	3
58	He is easily distracted	0	1	2	3
59	He is restless, always up and on the go	0	1	2	3

Which age group do you fall into? (please tick) under 20 20-30 31-40 41-50 over 50

How would you describe your ethnicity? (please tick)

- White
- Mixed white/black Caribbean or African.....
- Mixed white/Asian.....
- Asian or Asian British (Indian, Pakistani, Bangladeshi, other).....
- Black or Black British (Caribbean, African, other).....
- Other (please state) _____

Which Key Stage do you teach? (please tick)

- Foundation
- Key Stage 1
- Key Stage 2

Thank you for taking the time to complete this questionnaire

Appendix E

Horn Anxiety Rating Scale – Teachers (girl)

Below are a number of common problems that children have.

Imagine a 7-year-old girl displaying each of the behaviours listed.

For each item, ask yourself “how worried would I be about a 7-year-old girl displaying this behaviour?” Circle the answer that fits best for each one (please circle only one response).

- If you would not be worried at all, you would circle **0**
- If you would be a little bit worried, you would circle **1**
- If you would be very worried, you would circle **2**
- If you would be extremely worried, you would circle **3**

	Not at all worried	Just a little worried	Very worried	Extremely worried
1 She is defiant	0	1	2	3
2 She is restless or “squirmy”	0	1	2	3
3 She forgets things she has already learned	0	1	2	3
4 She appears to be unaccepted by the group	0	1	2	3
5 Her feelings are easily hurt	0	1	2	3
6 She is a perfectionist	0	1	2	3
7 She has temper outbursts; explosive, unpredictable behaviour	0	1	2	3
8 She is excitable, impulsive	0	1	2	3
9 She fails to give close attention to details or makes careless mistakes in schoolwork or other activities	0	1	2	3
10 She is cheeky	0	1	2	3
11 She is always “on the go” or acts as if driven by a motor	0	1	2	3
12 She avoids or has difficulties with tasks that require sustained mental effort (such as schoolwork or homework)	0	1	2	3
13 She is one of the last to be picked for teams or games	0	1	2	3
14 She is an emotional child	0	1	2	3
15 Everything must be just so	0	1	2	3
16 She is restless or overactive	0	1	2	3
17 She fails to finish things she starts	0	1	2	3
18 She does not seem to listen to what is being said to her	0	1	2	3
19 She actively defies or refuses to comply with adults’ requests	0	1	2	3
20 She leaves her seat in classroom or in other situations in which remaining seated is expected	0	1	2	3
21 She is poor in spelling	0	1	2	3
22 She has no friends	0	1	2	3
23 She is timid, easily frightened	0	1	2	3
24 She keeps checking things over and over	0	1	2	3
25 She cries often and easily	0	1	2	3
26 She is inattentive, easily distracted	0	1	2	3
27 She has difficulty organising tasks or activities	0	1	2	3
28 She has difficulty sustaining attention in tasks or play activities	0	1	2	3
29 She has difficulty waiting her turn	0	1	2	3
30 Her reading is not as good as you would expect for someone of her age	0	1	2	3
31 She does not know how to make friends	0	1	2	3
32 She is sensitive to criticism	0	1	2	3
33 She seems over-focused on details	0	1	2	3
34 She fidgets	0	1	2	3
35 She disturbs other children	0	1	2	3
36 She talks excessively	0	1	2	3
37 She argues with adults	0	1	2	3
38 She cannot remain still	0	1	2	3
39 She runs about or climbs excessively in situations where it is inappropriate	0	1	2	3
40 She lacks interest in schoolwork	0	1	2	3
41 She has poor social skills	0	1	2	3
42 She has difficulty playing or engaging in leisure activities quietly	0	1	2	3
Items continue overleaf				

	Not at all worried	Just a little worried	Very worried	Extremely worried
43 She likes everything neat and clean	0	1	2	3
44 She fidgets with hands or feet or squirms in seat	0	1	2	3
45 Demands must be met immediately – easily frustrated	0	1	2	3
46 She blurts out answers to questions before the questions have been completed	0	1	2	3
47 She is spiteful or vindictive	0	1	2	3
48 She has a short attention span	0	1	2	3
49 She loses things necessary for tasks or activities (e.g. school projects, pencils, books or toys)	0	1	2	3
50 She only pays attention to things that she is really interested in	0	1	2	3
51 She is shy, withdrawn	0	1	2	3
52 She has a short attention span	0	1	2	3
53 Things must be done the same way every time	0	1	2	3
54 Her mood changes quickly and drastically	0	1	2	3
55 She interrupts or intrudes on others (e.g. butts into others' conversations or games)	0	1	2	3
56 She is poor in arithmetic	0	1	2	3
57 She does not follow through on instructions and fails to finish schoolwork	0	1	2	3
58 She is easily distracted	0	1	2	3
59 She is restless, always up and on the go	0	1	2	3

Which age group do you fall into? (please tick) under 20 20-30 31-40 41-50 over 50

How would you describe your ethnicity? (please tick)

- White
- Mixed white/black Caribbean or African.....
- Mixed white/Asian.....
- Asian or Asian British (Indian, Pakistani, Bangladeshi, other).....
- Black or Black British (Caribbean, African, other).....
- Other (please state) _____

Which Key Stage do you teach?

- Foundation
- Key Stage 1
- Key Stage 2

Thank you for taking the time to complete this questionnaire

Appendix F Horn Anxiety Rating Scale – Mothers (boy)

Below are a number of common problems that children have.

Imagine a 7-year-old boy displaying each of the behaviours listed.

For each item, ask yourself “how worried would I be about a 7-year-old boy displaying this behaviour?” Circle the answer that fits best for each one (please circle one response only).

If you would not be worried at all, you would circle 0
 If you would be a little bit worried, you would circle 1
 If you would be very worried, you would circle 2
 If you would be extremely worried, you would circle 3

		Not at all worried	Just a little worried	Very worried	Extremely worried
1	He is angry and resentful	0	1	2	3
2	He has difficulty doing or completing homework	0	1	2	3
3	He is always “on the go” or acts as if driven by a motor	0	1	2	3
4	He is timid, easily frightened	0	1	2	3
5	Everything must be just so	0	1	2	3
6	He has no friends	0	1	2	3
7	He complains of stomach aches	0	1	2	3
8	He fights	0	1	2	3
9	He avoids, expresses reluctance about, or has difficulties engaging in tasks that require sustained mental effort (such as schoolwork or homework)	0	1	2	3
10	He has difficulty sustaining attention in tasks or play activities	0	1	2	3
11	He argues with adults	0	1	2	3
12	He fails to complete tasks	0	1	2	3
13	He is hard to control in shopping centres or while grocery shopping	0	1	2	3
14	He is afraid of people	0	1	2	3
15	He keeps checking things over and over again	0	1	2	3
16	He loses friends quickly	0	1	2	3
17	He complains of aches and pains	0	1	2	3
18	He is restless or overactive	0	1	2	3
19	He has trouble concentrating	0	1	2	3
20	He does not seem to listen to what is being said to him	0	1	2	3
21	He loses his temper	0	1	2	3
22	He needs close supervision to get through tasks	0	1	2	3
23	He runs about or climbs excessively in situations where it is inappropriate	0	1	2	3
24	He is afraid of new situations	0	1	2	3
25	He is fussy about cleanliness	0	1	2	3
26	He does not know how to make friends	0	1	2	3
27	He gets aches and pains or stomachaches before school	0	1	2	3
28	He is excitable, impulsive	0	1	2	3
29	He does not follow through on instructions and fails to finish schoolwork or chores	0	1	2	3
30	He has difficulty organising tasks and activities	0	1	2	3
31	He is irritable	0	1	2	3
32	He is restless or “squirmy”	0	1	2	3
33	He is afraid of being alone	0	1	2	3
34	Things must be done the same way every time	0	1	2	3
35	He does not get invited over to friends’ houses	0	1	2	3
36	He complains of headaches	0	1	2	3
37	He fails to finish things he starts	0	1	2	3
38	He is inattentive, easily distracted	0	1	2	3
39	He talks excessively	0	1	2	3
40	He actively defies or refuses to comply with adults’ requests	0	1	2	3
41	He fails to give close attention to details or makes careless mistakes in schoolwork or other activities	0	1	2	3

Items continued over the page

		Not at all worried	Just a little worried	Very worried	Extremely worried
42	He has difficulty waiting in lines or awaiting turn in games or group situations	0	1	2	3
43	He has a lot of fears	0	1	2	3
44	He has rituals that he must go through	0	1	2	3
45	He is distractible	0	1	2	3
46	He complains about being sick even when nothing is wrong	0	1	2	3
47	He has temper outbursts	0	1	2	3
48	He gets distracted when given instructions to do something	0	1	2	3
49	He interrupts or intrudes on others (e.g. butts into others' conversations or games)	0	1	2	3
50	He is forgetful in daily activities	0	1	2	3
51	He cannot grasp maths	0	1	2	3
52	He will run around between mouthfuls at meals	0	1	2	3
53	He is afraid of the dark, animals, or insects	0	1	2	3
54	He sets very high goal for himself	0	1	2	3
55	He fidgets with his hands or feet or squirms in his seat	0	1	2	3
56	He has a short attention span	0	1	2	3
57	He is touchy or easily annoyed by others	0	1	2	3
58	He has sloppy handwriting	0	1	2	3
59	He has difficulty playing or engaging in leisure activities quietly	0	1	2	3
60	He is shy, withdrawn	0	1	2	3
61	He blames others for his mistakes	0	1	2	3
62	He fidgets	0	1	2	3
63	He is messy or disorganised at home or school	0	1	2	3
64	He gets upset if someone rearranges his things	0	1	2	3
65	He clings to parent or other adults	0	1	2	3
66	He disturbs other children	0	1	2	3
67	He deliberately does things that annoy other people	0	1	2	3
68	His demands must be met immediately – easily frustrated	0	1	2	3
69	He only pays attention if it is something that he is interested in	0	1	2	3
70	He is spiteful or vindictive	0	1	2	3
71	He loses things necessary for tasks or activities (e.g. school projects, pencils, books, tools or toys)	0	1	2	3
72	He feels inferior to others	0	1	2	3
73	He seems tired or slowed down all the time	0	1	2	3
74	His spelling is poor	0	1	2	3
75	He cries often and easily	0	1	2	3
76	He leaves his seat in classroom or other situations in which remaining seated is expected	0	1	2	3
77	His mood changes quickly and drastically	0	1	2	3
78	He is easily frustrated in efforts	0	1	2	3
79	He is easily distracted	0	1	2	3
80	He blurts out answers to questions before the questions have been completed	0	1	2	3

Which age group do you fall into? (please tick) under 20 20-30 31-40 41-50 over 50

How would you describe your ethnicity? (please tick)

- White
- Mixed white/black Caribbean or African.....
- Mixed white/Asian.....
- Asian or Asian British (Indian, Pakistani, Bangladeshi, other).....
- Black or Black British (Caribbean, African, other).....
- Other (please state) _____

Thank you for taking the time to complete this questionnaire.

Appendix G Horn Anxiety Rating Scale – Mothers (girl)

Below are a number of common problems that children have.

Imagine a 7-year-old girl displaying each of the behaviours listed.

For each item, ask yourself “how worried would I be about a 7-year-old girl displaying this behaviour?” Circle the answer that fits best for each one (please circle only one response)

If you would not be worried at all, you would circle 0
 If you would be a little bit worried, you would circle 1
 If you would be very worried, you would circle 2
 If you would be extremely worried, you would circle 3

		Not at all worried	Just a little worried	Very worried	Extremely worried
1	She is angry and resentful	0	1	2	3
2	She has difficulty doing or completing homework	0	1	2	3
3	She is always “on the go” or acts as if driven by a motor	0	1	2	3
4	She is timid, easily frightened	0	1	2	3
5	Everything must be just so	0	1	2	3
6	She has no friends	0	1	2	3
7	She complains of stomach aches	0	1	2	3
8	She fights	0	1	2	3
9	She avoids, expresses reluctance about, or has difficulties engaging in tasks that require sustained mental effort (such as schoolwork or homework)	0	1	2	3
10	She has difficulty sustaining attention in tasks or play activities	0	1	2	3
11	She argues with adults	0	1	2	3
12	She fails to complete tasks	0	1	2	3
13	She is hard to control in shopping centres or while grocery shopping	0	1	2	3
14	She is afraid of people	0	1	2	3
15	She keeps checking things over and over again	0	1	2	3
16	She loses friends quickly	0	1	2	3
17	She complains of aches and pains	0	1	2	3
18	She is restless or overactive	0	1	2	3
19	She has trouble concentrating	0	1	2	3
20	She does not seem to listen to what is being said to her	0	1	2	3
21	She loses her temper	0	1	2	3
22	She needs close supervision to get through tasks	0	1	2	3
23	She runs about or climbs excessively in situations where it is inappropriate	0	1	2	3
24	She is afraid of new situations	0	1	2	3
25	She is fussy about cleanliness	0	1	2	3
26	She does not know how to make friends	0	1	2	3
27	She gets aches and pains or stomachaches before school	0	1	2	3
28	She is excitable, impulsive	0	1	2	3
29	She does not follow through on instructions and fails to finish schoolwork or chores	0	1	2	3
30	She has difficulty organising tasks and activities	0	1	2	3
31	She is irritable	0	1	2	3
32	She is restless or “squirmy”	0	1	2	3
33	She is afraid of being alone	0	1	2	3
34	Things must be done the same way every time	0	1	2	3
35	She does not get invited over to friends’ houses	0	1	2	3
36	She complains of headaches	0	1	2	3
37	She fails to finish things he starts	0	1	2	3
38	She is inattentive, easily distracted	0	1	2	3
39	She talks excessively	0	1	2	3
40	She actively defies or refuses to comply with adults’ requests	0	1	2	3
41	She fails to give close attention to details or makes careless mistakes in schoolwork or other activities	0	1	2	3

Items Continued Over the Page

		Not at all worried	Just a little worried	Very worried	Extremely worried
42	She has difficulty waiting in lines or awaiting turn in games or group situations	0	1	2	3
43	She has a lot of fears	0	1	2	3
44	She has rituals that he must go through	0	1	2	3
45	She is distractible	0	1	2	3
46	She complains about being sick even when nothing is wrong	0	1	2	3
47	She has temper outbursts	0	1	2	3
48	She gets distracted when given instructions to do something	0	1	2	3
49	She interrupts or intrudes on others (e.g. butts into others' conversations or games)	0	1	2	3
50	She is forgetful in daily activities	0	1	2	3
51	She cannot grasp maths	0	1	2	3
52	She will run around between mouthfuls at meals	0	1	2	3
53	She is afraid of the dark, animals, or insects	0	1	2	3
54	She sets very high goal for herself	0	1	2	3
55	She fidgets with her hands or feet or squirms in her seat	0	1	2	3
56	She has a short attention span	0	1	2	3
57	She is touchy or easily annoyed by others	0	1	2	3
58	She has sloppy handwriting	0	1	2	3
59	She has difficulty playing or engaging in leisure activities quietly	0	1	2	3
60	She is shy, withdrawn	0	1	2	3
61	She blames others for her mistakes	0	1	2	3
62	She fidgets	0	1	2	3
63	She is messy or disorganised at home or school	0	1	2	3
64	She gets upset if someone rearranges her things	0	1	2	3
65	She clings to parent or other adults	0	1	2	3
66	She disturbs other children	0	1	2	3
67	She deliberately does things that annoy other people	0	1	2	3
68	Her demands must be met immediately – easily frustrated	0	1	2	3
69	She only pays attention if it is something that she is interested in	0	1	2	3
70	She is spiteful or vindictive	0	1	2	3
71	She loses things necessary for tasks or activities (e.g. school projects, pencils, books, tools or toys)	0	1	2	3
72	She feels inferior to others	0	1	2	3
73	She seems tired or slowed down all the time	0	1	2	3
74	Her spelling is poor	0	1	2	3
75	She cries often and easily	0	1	2	3
76	She leaves her seat in classroom or other situations in which remaining seated is expected	0	1	2	3
77	Her mood changes quickly and drastically	0	1	2	3
78	She is easily frustrated in efforts	0	1	2	3
79	She is easily distracted	0	1	2	3
80	She blurts out answers to questions before the questions have been completed	0	1	2	3

Which age group do you fall into? (please tick) under 20 20-30 31-40 41-50 over 50

How would you describe your ethnicity? (please tick)

White

Mixed white/black Caribbean or African.....

Mixed white/Asian.....

Asian or Asian British (Indian, Pakistani, Bangladeshi, other).....

Black or Black British (Caribbean, African, other).....

Other (please state) _____

Thank you for taking the time to complete this questionnaire.

Appendix H Teachers' experience of working with a child with ADHD

In order to describe the collective experience of teachers sampled in this research, I would be grateful if you could indicate your personal experience (if any) of working with children with ADHD.

Your responses will be used to describe the sample as a whole and will be anonymous.

Many thanks.

1. Have you ever taught a child with a diagnosis of ADHD?

Yes/no

If yes, please give details such as the number of times that this has happened, the gender of the child, and whether you were instrumental in the referral process

2. Have you ever taught a child with suspected ADHD?

Yes/no

If yes, please give details such as the number of times that this has happened, the gender of the child, and the outcome

3. If you wish to make any additional comments in relation to these questions or in response to any aspect of the research, please do so.

Appendix I Head Teachers' Information Sheet – Phase 1

Information Sheet (July 2003)

Study Title: The Influence of Gender on the Expression of Concern about ADHD Behaviours

Principal Researcher: Kate Horn

Contact Details: 0116 2522162 or katehorn@ntlworld.com

Your school is invited to take part in the above study. Please read the following before you decide whether or not you want to take part.

What is the purpose of the study?

Data from epidemiological studies suggests that the proportion of females currently receiving a diagnosis of Attention Deficit Hyperactivity Disorder (ADHD) is under representative of the actual numbers of females with ADHD in the community. This study uses a widely used diagnostic tool that is instrumental in the diagnosis of ADHD and examines those factors that prompt referral of children to services for ADHD assessment. The study examines mothers' and teachers' anxieties about children's behaviour and looks at how this may vary as a function of the gender of the child being rated.

What will happen if the school takes part?

Female members of staff will be asked to complete two questionnaires. The first questionnaires will be handed out at the beginning of the Autumn term. Two weeks later the completed questionnaires will be collected by the Principal Researcher and the second questionnaires will be handed out. Two weeks later these will be collected by the Principal Researcher.

Each questionnaire takes approximately ten minutes to complete. The questionnaires ask the teacher to rate how worrying they would find a list of behaviours if they were displayed by a 7-year-old child. One of the two questionnaires asks the teacher to make ratings for a 7-year-old girl and the other for a 7-year-old boy. Mothers of Year Three children will be asked to complete one questionnaire. It takes 15-20 minutes to complete and asks them to rate how worrying they would find a list of behaviours if they were displayed by a 7-year-old child. A joint letter will be sent from the head teacher and the researcher to the mothers of Year Three children, along with a copy of the questionnaire. Completed questionnaires will be returned to the school secretary in the envelope provided. These will be collected by the Principal Researcher.

What are the possible disadvantages of taking part?

Female teachers will be required to complete two questionnaires. The questionnaires take approximately ten minutes each to complete.

What are the possible benefits of taking part?

The results of the study will add to the growing body of knowledge about girls with ADHD. There has been relatively little research on the presentation and needs of girls with ADHD, with most of the research focussing on males. There has been no research examining which behaviours mothers and teachers find worrying when thinking about girls and boys.

For each completed questionnaire, a £2.50 WHSmith voucher will be given to the school.

Will the results be kept confidential?

There will be no identifying information on the questionnaires and all results will be anonymous and confidential. The school will not be mentioned by name in the final thesis and subsequent publications.

What will happen to the results of the research study?

The results will be written up as part of a thesis towards a doctorate in clinical psychology. They will also be presented at local conference and the paper will be written up and submitted to a journal.

Who is organising and funding the research?

The research is funded by the University of Leicester. The study has also been registered with the sponsor, Leicester Partnership NHS Trust.

Thank you for taking the time to read this, please contact me if you have any questions.

You will be given a copy of the Information Sheet and Consent Form to keep.

Consent Form

Title of study: Expression of Concern about ADHD Behaviours: the Influence of Gender

Principal Researcher: Kate Horn (07974345314)

I have read and understood the Information Sheet (dated _____) for the above study and have had the opportunity to ask questions.

✓	x

I agree to take part in the above study.

--

Name of school

Date

Signature of Head Teacher

Name of Principal Researcher

Date

Signature of Principal Researcher

Appendix K Teacher's Opt-out Consent Form

Dear Teacher

You are invited to take part in a research project funded by the University of Leicester. If you agree to take part, you will be asked to complete two questionnaires. Each questionnaire asks you to rate how worried you would be by a list of behaviours if displayed by an imaginary child.

The first questionnaire will be handed out on _____

There will be no identifying information on the questionnaires and all results will be anonymous and confidential. The school will not be mentioned by name in the final thesis and subsequent publications.

The school will receive a £2.50 WHSmith voucher for each completed questionnaire.

Full details of the purpose of the study will be presented to staff following completion of the questionnaires and the findings of the study will be disseminated at the end of the project.

Many thanks
Yours sincerely

Kate Horn
Trainee Clinical Psychologist,
University of Leicester

If you do NOT wish to take part in the above study, please complete this slip and return in the envelope provided *by Friday 3rd October 2003*.
Your initials will be taken off the list and you will not receive any questionnaires. You will not be asked to give a reason for your decision.

If you are happy to participate, do not return this slip. You will automatically receive the questionnaires.

-----&-----

I do not want to take part in the research project.

School code:

Your Initials:

Information Sheet (January 2004)

Study Title: Expression of Concern about ADHD Behaviours: the Influence of Gender

Principal Researcher: Kate Horn

Contact Details: 0116 2522162 or katehorn@ntlworld.com

Your school is invited to take part in the above study. Please read the following before you decide whether or not you want to take part.

What is the purpose of the study?

Data from epidemiological studies suggests that the proportion of females currently receiving a diagnosis of Attention Deficit Hyperactivity Disorder (ADHD) is under representative of the actual numbers of females with ADHD in the community. This study uses a widely used diagnostic tool that is instrumental in the diagnosis of ADHD and examines those factors that prompt referral of children to services for ADHD assessment. The study examines teachers' anxieties about children's behaviour and looks at how this may vary as a function of the gender of the child being rated.

What will happen if the school takes part?

Female members of staff will be asked to complete two questionnaires. Each questionnaire takes approximately ten minutes to complete. The 1st questionnaire will be completed during the weekly staff meeting. The 2nd questionnaire will be completed 1-2 weeks later, also during a staff meeting. The questionnaires ask the teacher to rate how worrying they would find a list of behaviours if they were displayed by a 7-year-old child. One of the two questionnaires asks the teacher to make ratings for a 7-year-old girl and the other for a 7-year-old boy.

What are the possible disadvantages of taking part?

Female teachers will be required to complete two questionnaires. The questionnaires take approximately ten minutes each to complete.

What are the possible benefits of taking part?

The results of the study will add to the growing body of knowledge about girls with ADHD. There has been relatively little research on the presentation and needs of girls with ADHD, with most of the research focussing on males. There has been no research examining which behaviours teachers find worrying when thinking about girls and boys.

For each completed questionnaire, a £2.50 WHSmith voucher will be given to the school.

Will the results be kept confidential?

There will be no identifying information on the questionnaires and all results will be anonymous and confidential. The school will not be mentioned by name in the final thesis and subsequent publications.

What will happen to the results of the research study?

The results will be written up as part of a thesis towards a doctorate in clinical psychology. They will also be presented at local conference and the paper will be written up and submitted to a journal.

Who is organising and funding the research?

The research is funded by the University of Leicester. The study has also been registered with the sponsor, Leicester Partnership NHS Trust.

**Thank you for taking the time to read this, please contact me if you have any questions.
You will be given a copy of the Information Sheet and Consent Form to keep.**

Dear Parent/Guardian

I have agreed for _____ School to take part in a research project funded by the University of Leicester.

The study is looking at the judgements that mothers and female teachers make about children's behaviour.

All the mothers of Year Three children are invited to take part.

If you decide to take part, please complete the enclosed questionnaire which asks you to rate how worried you would be by each of the behaviours listed if displayed by a 7-year-old child.

Please return the completed questionnaire to school in the envelope provided by _____

There will be no identifying information on the questionnaires and all results will be anonymous.

The school will receive a £2.50 WHSmith voucher for each returned, completed questionnaire.

Many thanks
Yours sincerely

Head Teacher

Dear Teacher

Many thanks for taking part in the research project at the beginning of this year. You may remember completing two questionnaires in _____.

The research project is looking at Attention Deficit Hyperactivity Disorder (ADHD). Children with ADHD show extremely high levels of inattention, they are often overactive and act impulsively, without considering the consequences. The project is examining how concerned mothers and female teachers are by the inattentive, overactive and impulsive behaviours associated with ADHD when shown by boys and girls.

The questionnaires that you completed listed a number of different behaviours, some of which are symptomatic of ADHD. You were asked to rate your concern about each behaviour if it were shown by a 7-year-old child. You completed one questionnaire rating how worried you would be by each behaviour if it were displayed by a 7-year-old boy and another one rating a 7-year-old girl.

The reason I asked you to do this is because far more boys receive a diagnosis of ADHD than girls do – a ratio of 9:1. Studies within the general population, however, show that whilst there are more boys than girls showing the symptoms of ADHD, the ratio is probably closer to 3:1. This suggests that either boys are diagnosed too easily or that girls are not diagnosed often enough.

For a diagnosis of ADHD to be made, a child must first be referred for help. For a child to be referred, a difficulty must first be recognised. This is done most frequently by a parent or a teacher. It is extremely important to investigate the attitudes of parents and teachers towards the behaviours associated with ADHD to understand the affect that this has on the way in which children's difficulties are recognised and acted upon.

Teachers' attitudes and opinions are of particular importance as it is often in the school environment that problems with concentration and attention, associated with ADHD, first become evident.

Results of the study

The individual behaviours presented on the questionnaire were divided into:

- Inattentive behaviours (e.g. 'he/she is easily distracted')
- Hyperactive behaviours (e.g. 'he/she fidgets with hands or feet or squirms in seat')
- Restless/impulsive behaviours (e.g. 'he/she is excitable, impulsive')
- Oppositional behaviours (e.g. 'he/she argues with adults')

The study found that teachers rated the same behaviour as more worrying when considering a 7-year-old *boy* compared to a 7-year-old *girl* for each of these types of behaviour.

There are a number of possible reasons for these results. Boys with ADHD tend to show more hyperactive or impulsive behaviours than girls, which may be more noticeable and disruptive in a classroom setting. Girls with ADHD tend to present with more inattentive behaviours, which may go un-noticed or may be described in terms of learning problems or emotional difficulties.

Teachers' previous experience of the different ways in which boys and girls behave in the classroom may have made them more likely to rate the same behaviour as more worrying when shown by a boy than by a girl, perhaps because it is more likely to be noticeable and disruptive. Teachers may have different expectations regarding the behaviour of boys and girls.

Conclusion

At this stage of the research, the conclusions drawn from the data are only tentative.

The final results of this study will be written up by the end of June 2004 as part of a thesis towards a Doctorate in Clinical Psychology.

If you have any comments or would like more details about the research please contact me by email, katehorn@ntlworld.com, or telephone, 07974345314.

Many thanks again for your participation.

Yours sincerely

Kate Horn
Trainee Clinical Psychologist
Leicester University

Dear Parent

Many thanks for taking part in the research project at the beginning of this year. You may remember completing a questionnaire in November/December time.

The research project is looking at Attention Deficit Hyperactivity Disorder (ADHD). Children with ADHD show extremely high levels of inattention, they are often overactive and act impulsively, without considering the consequences. The project is examining how concerned mothers and female teachers are by the inattentive, overactive and impulsive behaviours associated with ADHD when shown by boys and girls.

The questionnaire that you completed listed a number of different behaviours, some of which are symptomatic of ADHD. You were asked to rate your concern about each behaviour if it were shown by a 7-year-old child. You completed one questionnaire *either* rating how worried you would be by each behaviour if it were displayed by a 7-year-old boy *or* rating a 7-year-old girl.

The reason I asked you to do this is because far more boys receive a diagnosis of ADHD than girls do – a ratio of 9:1. Studies within the general population, however, show that, whilst there are more boys than girls showing the symptoms of ADHD, the ratio is probably closer to 3:1. This suggests that either boys are diagnosed too easily or that girls are not diagnosed often enough.

For a diagnosis of ADHD to be made, a child must first be referred for help. For a child to be referred, a difficulty must first be recognised. This is done most frequently by a parent or a teacher. It is extremely important to investigate the attitudes of parents and teachers towards the behaviours associated with ADHD to understand the affect that this has on the way in which children's difficulties are recognised and acted upon.

Results of the study

The individual behaviours presented on the questionnaire were divided into:

- Inattentive behaviours (e.g. 'he/she is easily distracted')
- Hyperactive behaviours (e.g. 'he/she fidgets with hands or feet or squirms in seat')
- Restless/impulsive behaviours (e.g. 'he/she is excitable, impulsive')
- Oppositional behaviours (e.g. 'he/she argues with adults')

The study found that there was no difference in the way in which mothers rated behaviours for boys and girls. Teachers, however, were found to rate the same behaviour as more worrying when considering a 7-year-old *boy* compared to a 7-year-old *girl* for each of these types of behaviour.

There are a number of possible reasons for these results. It is in the school setting that the difficulties with attention and overactivity associated with ADHD often first become evident. In a school setting different demands are made on a child from those that they experience at home, in terms of concentrating and sitting still for periods of time.

Boys with ADHD tend to show more hyperactive or impulsive behaviours than girls, which may be more noticeable and disruptive in a classroom setting. Girls with ADHD tend to present with more inattentive behaviours, which may go un-noticed or may be described in terms of learning problems or emotional difficulties.

Teachers' previous experience of the different ways in which boys and girls behave in the classroom may have made them more likely to rate the same behaviour as more worrying when shown by a boy than by a girl, perhaps because it is more likely to be noticeable and disruptive. Teachers may have different expectations regarding the behaviour of boys and girls.

Conclusion

At this stage of the research, the conclusions drawn from the data are only tentative.

The final results of this study will be written up by the end of June 2004 as part of a thesis towards a Doctorate in Clinical Psychology.

If you have any comments or would like more details about the research please contact me by email, katehorn@ntlworld.com, or telephone, 07974345314.

Many thanks again for your participation.

Yours sincerely

Kate Horn
Trainee Clinical Psychologist
Leicester University

Appendix P Kolmogorov-Smirnov Statistics for Teacher Data

Gender of child being rated	Subscale	Kolmogorov-Smirnov		
		Statistic	df	Sig.
Male	DSM-IV Symptoms subscales: Inattentive	.125	45	.074
	DSM-IV Symptoms subscales: Hyperactive	.115	44	.170
	Conner's Global index: Restless-impulsive	.127	45	.066
	Oppositional Subscale	.107	42	.200
Female	DSM-IV Symptoms subscales: Inattentive	.136	45	.037*
	DSM-IV Symptoms subscales: Hyperactive	.144	43	.026*
	Conner's Global index: Restless-impulsive	.207	44	.000* ($p < .0005$)
	Oppositional Subscale	.125	45	.076

* $p < .05$ indicates that the data is not normally distributed.