



Assessing speech, language and communication difficulties in children referred for ADHD: A qualitative evaluation of a UK child and adolescent mental health service

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Abstract

Background: Attention-deficit hyperactivity disorder (ADHD) is one of the most common childhood neuropsychiatric disorders and is highly comorbid with speech, language and communication difficulties (SLCDs). However, it is unclear how often SLCDs are identified in ADHD referrals in routine practice and whether there are unidentified SLCDs within this population.

Method: A thematic analysis was conducted on a random sample of case notes from 18 referrals for ADHD made to a child and adolescent mental health service (CAMHS) in London, United Kingdom. Analyses aimed to identify (a) the types of SLCDs detected during assessment, (b) at which point of the episode of care these SLCDs were suspected and (c) whether a referral or consultation was made to a speech and language therapist (SLT) for further evaluation.

Results: Out of 18 cases investigated, 15 were found to have possible SLCDs based on case notes and reports provided by external agencies. However, only four were referred by CAMHS for further assessment. It is unclear what, if any, steps other external agencies took. Themes describing types of SLCDs, comorbidities and the process of identification are discussed.

Conclusion: The analysis of this service's case notes revealed a range of different routes to the identification of SLCDs, and it was unclear what steps were taken as a result of assessment. A limitation is that this is just one service and the results may not generalise. However, given the similarity in practitioner training received across the country and that practitioners move from service to service, there are grounds for repeating the study in other services. We recommend a more structured approach to identifying SLCDs and recording assessment and treatment decisions made.

Keywords

ADHD, SLCD, SLT, service evaluation, CAMHS

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Introduction

Attention-deficit hyperactivity disorder (ADHD) is one of the most prevalent childhood neuropsychiatric disorders, affecting approximately 3–7% of children from preschool to school-age, continuing into adolescence and adulthood (Barkley, 1990). According to the *Diagnostic and Statistical Manual of Mental Disorders*, 5th edition (DSM-5), ADHD is characterised by persistent and severe levels of hyperactivity or impulsivity and/or symptoms of inattention that interfere with normal functioning in social, educational and working environments. In order for a formal diagnosis of ADHD to be given, six or more symptoms of inattention or hyperactive-impulsive behaviour must be observed in multiple settings (American Psychiatric Association, 2013). These symptoms are usually first evident in early childhood before age of 7 years and often co-occur with other conditions, such as oppositional defiant disorder, conduct disorder, anxiety disorders, communication disorders and learning disorders (Biederman, Newcorn, & Sprich, 1991). ADHD has been associated with greater risks for low academic achievement and poor school performance, poor social relationships and emotional and behavioural problems (Barkley, 1990; Barkley, Fischer, Edelbrock, & Smallish, 1990). The National Institute for Health and Clinical Excellence (NICE) in the United Kingdom recommends psychological therapies such as cognitive behavioural therapy, school-based interventions and remedial therapies such as speech and language therapy, and medication as treatment strategies for ADHD in children and young people (National Collaborating Centre for Mental Health (NCCMH), 2009).

Of all the conditions that are found to be comorbid with ADHD, speech, language and communication difficulties (SLCDs) are one of the most common (Tomblin & Mueller, 2012). SLCDs are diagnosed as a delay in development, relative to typically developing norms, or when a child's language presents a different pattern from the norm (Bishop & Snowling, 2004). Language and communication difficulties can be attributed to several causes, such as physical disabilities, early language experiences or a general learning difficulty often due to deficits in cognitive functioning (Dockrell & Messer, 1999). Yet, there are also many who struggle with language development in the absence of these causes (Lindsay & Dockrell, 2000).

In a study of 75 children with ADHD (Bruce, Therlund, & Nettelbladt, 2006), approximately half had been referred to a speech and language therapist (SLT). Love and Thompson (1988) found that two-thirds of psychiatric outpatients with SLCDs had a diagnosis of ADHD. Trautman, Giddan and Jurs (1990) found that approximately 68% of children with ADHD demonstrate SLCDs. Although these prevalence rates have been taken from clinical samples and cannot be generalised to the population at large, several population surveys conducted since then have suggested a strong association between ADHD and SLCDs. Beitchman, Nair, Clegg, Ferguson and Patel (1985) conducted a population study investigating the prevalence of psychiatric disorders in children with SLCDs and found that 30% of those with SLCD also displayed attention-deficit symptoms, compared to 5% in the control group. Some of these SLCDs include speech articulation impairments, expressive and receptive language impairments and language-processing difficulties, for example, auditory memory, discrimination or association (Baker & Cantwell, 1992).

Theories linking ADHD and SLCD

Although ADHD is defined based on symptom clusters describing behaviour (i.e. inattention and hyperactivity or impulsivity), research attempting to describe the nature of ADHD have included deficits in executive functions as integral cognitive features of ADHD (e.g. Barkley, 1997), especially those that are involved in inhibitory control (Barkley, 1998). Studies examining the overlap between ADHD and SLCDs have found that children who display both conditions had more severe problems with visual-motor integration, as well as poorer performance on cognitive ability tests, as compared to children who only presented with ADHD or children with normal language with

another psychiatric diagnosis (Beitchman, Tuckett, & Bath, 1987). However, Tirosh and Cohen (1998) found that there was no clinically significant difference in Wechsler full-scale IQ between those with ADHD and language problems, compared to those with only ADHD. Specifically, short-term memory was significantly different between the two groups, as measured by verbal sequential recall and text recall.

Other executive functions tied to pragmatic and narrative discourse skills are a common interface between both conditions. Pragmatic problems in language have been described by Rapin and Allen (1983) as having ‘severe impairment in the ability to encode meaning relevant to the conversational situation’ and ‘impaired comprehension of connected discourse’, as children with these problems are able to produce well-formed, phonologically intact utterances, however, not in a way that allows them to participate in communicative discourse. Humphries, Koltun, Malone and Roberts (1994) found that children with attention problems tend to exhibit problems in practical use of language, which often leads to social difficulties as these children experience difficulties in determining the appropriate timing and quantity of language in social contexts (Tannock, 2002).

Working memory has also been acknowledged as a possible interface between the comorbidity of ADHD and SLCDs (e.g. Denckla, 1996; Martinussen & Tannock, 2006). Impairments in working memory, in particular, verbal and spatial, have been found not only in children with ADHD but also in those who exhibit reading disabilities or language impairments (e.g. Cohen et al., 2000; Tannock & Schachar, 1996). Cohen et al. (2000) found that working memory measures used to assess elements of executive functions of children with ADHD are more closely associated with language impairment than with ADHD. Martinussen and Tannock (2006) also found that central executive verbal processing was significantly linked to reading achievement and inattention symptoms. This was measured by using a subtest from the Wechsler intelligence scale for Children—third edition (WISC-III; Wechsler, 1991) which used recall of digits forwards and backwards to measure verbal storage and processing. This may suggest that such executive functions are common neuropsychological weaknesses for children who exhibit both inattention symptoms and SLCDs.

Underdiagnosis of SLCDs

Despite an established comorbidity between SLCDs and ADHD, as well as other psychiatric conditions, some studies have found that SLCDs are underdiagnosed and overlooked in clinical practice. In a study by Cohen, Davine, Horodezky, Lipsett and Isaacson (1993), it was found that 53% of 399 children who were referred for psychiatric assessments had developmental language disorders, but only about half of them were diagnosed. It was suggested that children who were undiagnosed often had fewer expressive language problems, which may have been a reason for parents and professionals to focus on behavioural and attentional problems.

Similar observations of underidentification of speech and language impairments were found by Stringer and Lozano (2007), who examined incidence and identification within a special school for emotional and behavioural disorders. Not only did they find a high incidence of SLCDs in children with emotional and behavioural disorders, but also the same was observed for children with ADHD.

A 10-year review on language disorders similarly found that they were common but underdiagnosed in community and clinical settings (Toppelberg & Shapiro, 2000). They suggested that early identification of language difficulties would be crucial in psychiatric treatment, as a child’s SLCDs would affect every aspect of psychiatric evaluation, treatment and intervention.

Aims of this study

This study aimed to investigate whether similar trends of underidentifying SLCDs were observed by retrospective analysis of ADHD referrals made to a UK child and adolescent mental health

service (CAMHS). More specifically, the aims were to identify (a) the types of SLCDs detected during assessment, (b) at which point of the episode of care (e.g. referral, assessment, follow-up) these SLCDs were suspected and (c) whether a referral or consultation was made to an SLT for further evaluation. It is hoped that this study would bring to light pathways through which SLCDs are identified in a clinical setting, as well as provide insight into factors that may contribute to the omission of considering SLCDs and follow-up interventions.

Methods

Sample

Cases were randomly sampled from case notes for children and young people referred to a CAMHS with suspected ADHD. In 2012, this service received a total of 1005 referrals, 77 of which were coded as ADHD or hyperactivity, and 50 were coded as speech and language difficulties. Of the ADHD or hyperactivity queries, only eight (10.4%) were also coded for suspected SLCDs. Although this is less than the 68% found in previously reported data, it is statistically significant more than the expected value of 3.8 under the null hypothesis of no association between SLCDs and other problems (adjusted standardised residual = 2.1, $p = .04$). These eight cases were excluded from the present study, leaving 69 referrals from which to take a random sample. Both first-time referrals and re-referrals were considered for the study; for re-referrals, all available case notes from episodes of care before 2012 were included in the analysis.

The sample size was chosen on the basis of a thematic analysis power calculation (Fugard & Potts, 2015). Assuming that 68% of children with ADHD also have SLCDs (Trautman et al., 1990), 18 participants would be needed to have 90% probability of finding 10 participants with SLCDs in the present sample. This was rounded up to 20 to allow for methodological problems, for example, locating paper records. Out of the 20 randomly identified cases, 2 were not seen by the service, 1 moved out of the area before being seen and 3 files were not successfully located within the time available, leaving 14 cases. Hence, four additional cases were randomly selected to replace them, resulting in a total sample size of 18. Children were aged between 2 and 13 years ($M = 8.2$; $SD = 3.1$) at the time of referral.

Procedures

The case notes for the suspected 18 ADHD cases were reviewed. This included reviewing referral information, clinical notes, medical and school reports. The analysis focused on selecting information describing signs and symptoms of SLCDs, the professional who identified the difficulties and any actions that were taken as a result (e.g. referral to SLT for assessment or intervention). The data were analysed using thematic analysis (Braun & Clarke, 2006), guided by Ryan and Bernard's (2003) heuristics for constructing themes. Repetition and similarities in the data formed the majority of themes identified; missing data, particularly in relation to interventions and follow-up, were also used for themes identification.

Results

Referral source

Cases were referred by a variety of sources: seven (39%) by a general practitioner (GP), five (28%) by a specialist service, for example, Specialist Paediatric team, 2 (11%) by a community paediatrician, two (11%) by an educational psychologist (EP), one (5.5%) by a school, and one (5.5%) by a SLT.

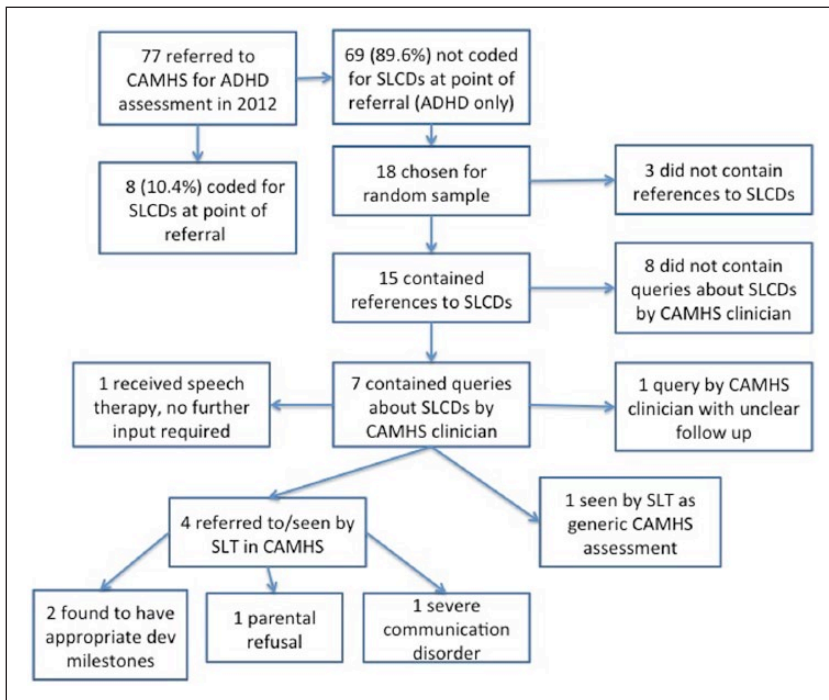


Figure 1. Breakdown of random sample.

Professionals involved in episodes of care

Some cases were seen by more than one discipline, either in sequence or concurrently. Twelve cases were seen by psychiatry for assessment, 5 cases by psychology, 3 by speech and language therapy, 1 by psychotherapy and 2 by the Primary Mental Health team (see Table 2).

Identifying of SLCDs within CAMHS and formal diagnoses

Of the 18 cases in the sample, 15 (83%) contained references to possible SLCDs. However, only 7 out of the 15 cases mentioned or queried either past or current SLT involvement by a CAMHS clinician. The other eight cases contained SLCD concerns by other professionals (e.g. teachers, EP) or family, but there was no evidence from the case files that the CAMHS clinician had screened for or ruled out SLCDs.

Of the seven cases that were queried by a CAMHS clinician, four were referred for a formal assessment by an SLT within the service, one had noted previous SLT interventions that had concluded, one was seen by an SLT as part of a generic CAMHS assessment who also noted the child's SLCDs and one contained evidence of SLCD queries but without clear follow-up referrals or assessments being made.

Of the four who were referred for formal assessment with an SLT, one could not access SLT services due to parental refusal, two were found to be developmentally appropriate and one was diagnosed with having 'obvious social communication difficulties, and severely challenging behaviour'. It was recommended that his language skills should be assessed more comprehensively both in his first language and in English. An autism spectrum disorder (ASD) assessment was also recommended based on his communication difficulties (see Figure 1).

Table 1. Frequency of SLCDs prevalent in ADHD and ASD diagnoses.

Diagnosis	SLCD	No SLCD
None	4	1
ADHD only	5	2
ASD only	1	0
ADHD and ASD	5	0
Total	15	3

ADHD: attention-deficit hyperactivity disorder; ASD: autism spectrum disorder; SLCD: speech, language and communication difficulty.

A total of 12 (67%) of the 18 in the sample were diagnosed with ADHD, where references of SLCDs were found in 10 (83%) of them; 5 (28%) were diagnosed with both ADHD and ASD, all of whom displayed some form of SLCD (see Table 1).

Examples of SLCDs

a. Difficulties in speech and language

The most prevalent types of speech and language difficulties recorded were difficulties in receptive and expressive language, not attaining expected levels for language-related tasks, going off on a tangent during conversation and a general language delay.

For example, one child (7-year-old) was reported to show difficulty with syntax, coherence and having poor receptive language skills, based on an EP's report. Another child (8-year-old) presented with difficulty in listening to verbal instruction and was later referred for an SLT assessment.

Similar descriptors could be found in ASD assessment reports from the Children Development Centre (CDC), such as a child (11-year-old) who was described as '[responding] to questions with a shrug or by saying "because"', and that they were 'unsure if he [could] understand what [was] being said to him'.

b. Difficulties in social communication

Many of the cases presented with typical language skills but often described behaviours that suggested difficulty in social communication. The most common descriptions were little eye contact, inappropriate interactions with others (e.g. displaying inappropriate behaviours for their age), peer social relationship problems, a tendency to dominate conversations and general social communication difficulties. Similar difficulties had been described as 'little reciprocity in conversation', 'finds it difficult to reciprocate in conversation' and 'struggles to express himself'.

Social communication difficulties often contributed to having peer relationship problems. This was linked to behavioural problems in some cases, for example, in the form of 'outbursts' or 'inappropriate sexual behaviour' as noted by a neurodevelopmental report. It was also noted that one child (9-year-old) 'hugs and licks' other children, 'frequently invading [their] personal space'. Peer relationships could also be affected when a child talks over others and has a tendency to 'dominate conversation and only talk about topics [the child] chooses'. At times, this is not limited to peers – the child may also '[speak] over adults in a very directive manner, not following the usual expectations of how a child should speak to an adult' (see Table 2). Other examples of difficulties recorded included 'limited reciprocal communication', 'poor social skills' and showing 'limited understanding into other people's emotions'.

Table 2. Frequency of problems picked up by professionals.

Sub-themes	School	EP	GP/Family	CDC	Non-CAMHS Specialist Teams	CAMHS
Difficulty concentrating	5	2	1	3	0	0
Difficulties in Language	4	12	6	5	3	2
difficulty in expressive language	1			1	1	
difficulty in receptive language	1	2		2		
difficulty with syntax, coherence		1				
not reading and/or writing at appropriate level		2				
difficulty in speech regulation				1		
general language difficulty	2	2		1	1	
delayed speech development in the past			3			
poor non-verbal skills		2				
poor spelling/literacy/wordreading		2				
goes off on tangents		1			1	
lang still currently a problem			3			2
Social Communication Difficulties	3	3	2	7	2	4
poor pragmatic interaction	1					
poor social relationships with peers	1		1		1	
limited insight into others' perceptions			1			1
poor eye contact		1		2		1
answers questions inappropriately		1		1		
dominates conversations				2		1
generally poor social communication skills	1	1		2	1	1
Behavioural Difficulties	4	4	12	2	7	4
hyperactive/overactive	2	1	6	1	3	2
aggressive/challenging	2	2	6		2	2
inappropriate (developmentally/sexual) behaviour		1		1	2	

CAMHS: Child and Adolescent Mental Health Service; CDC: Children Development Centre; EP: Educational Psychologist; GP: General Practitioner.

Assessment and identification of SLCDs

a. Tests administered for ADHD, ASD and language or learning concerns

In the current sample, the children were referred to different professionals either prior to or following a generic CAMHS assessment due to concerns around learning or language difficulties, low levels of attainment at school and ASD concerns. When difficulties were related to school and learning, an EP was often involved, and at times, formal testing was carried out. Of the 18 cases, 3 were assessed using the British Ability Scales—second edition (BAS-II) assessment (Elliott, Smith, & McCulloch, 1996). The BAS-II assesses verbal ability, non-verbal reasoning, spatial ability, recall of objects and pictures and measures achievement of word-reading, spelling and number skills. For a hyperactive child who has taken this test, exploring performance on verbal ability, non-verbal reasoning, word-reading and spelling skills usually provided some information on the child's language abilities and whether there were suspected difficulties. For example, the BAS-II identified 'below average for verbal similarities', 'average non-verbal skills', 'below average for spelling (under literacy)' and 'low average for word-reading'.

Another test that was administered by the EP is the Wechsler Individual Assessment Test—second UK edition (WIAT-II UK) by Wechsler (2005). It was developed to assess abilities in the domain of reading, mathematics, written language and oral language. Other than mathematics, the other three domains were useful in providing information on a child's language abilities. For example, one of the children in the sample was described as performing in the 'mild learning disability' range on a receptive language task based on this assessment tool.

In one instance, the Children's Communication Checklist—version 2 (CCC-2) (Bishop, 2003) was administered by the EP. This checklist was developed as a means of assessing the communicative use of language, as well as pragmatic difficulties that affect everyday communication (Bishop, 1998). Features such as 'poor pragmatic interaction', 'difficulty with syntax', 'difficulty with coherence', 'difficulty with non-verbal and social communication' were identified through the use of this test.

As there were 6 cases with ASD queries in the sample of 18, some of them were referred to the CDC for a two-part ASD assessment using the Autism Diagnostic Interview—revised (ADI-R; Lord, Rutter, & Le Couteur, 1994) and the Autism Diagnostic Observation Schedule (ADOS; Lord, Rutter, DiLavore, & Risi, 2001) which is a play- and activity-based assessment that provides standard contexts for observation of aspects of social behaviour, communication, play and restricted and repetitive behaviours across the ability range.

For one child, information related to language ability that was derived from the ADI-R included 'no concerns with delayed language: able to initiate conversation, follows instructions, good eye contact' and 'demonstrates excellent writing, speech and language skills'. For the same child, the ADOS report included 'little reciprocity in conversation', 'only enjoys interactions when talking about his interest', 'unable to talk about others' feelings in everyday situation' and 'showed limited insight about what it means to be a friend'. As seen from the reports, this child did not have significant difficulties with his language skills but struggled with communication, on top of hyperactive behaviour (information obtained from the referral) and was formally diagnosed with both ADHD and Asperger's syndrome.

b. Types of problems identified by professional type

The data extracts from the case files that described presenting problems were also categorised based on which professional they had been identified by (see Table 3), with the professionals broadly fitting six categories: school, EP, GP or family, CDC, Non-CAMHS Specialist Teams and

Table 3. Cross tabulation of identification of presenting problems and the professionals involved.

Types of presenting problems	Professionals involved					
	CAMHS	CDC	EP	GP/family	non-CAMHS	School
Behavioural	4 (0.7)	1 (-2.4*)	3 (-1.8)	12 (3.1*)	5 (1.0)	4 (-0.5)
Communication	4 (1.1)	8 (2.2*)	4 (-0.8)	2 (-1.9)	4 (0.6)	3 (-0.7)
Concentration	0 (-1.2)	3 (0.9)	2 (-0.3)	1 (-1.1)	0 (-1.3)	5 (2.7*)
Language	2 (-0.9)	5 (-0.3)	12 (2.7*)	6 (-0.5)	3 (-0.6)	4 (-0.7)

CAMHS: child and adolescent mental health service; CDC: Children Development Centre; EP: educational psychologist; GP: general practitioner.

* $p < .05$. Adjusted standardised residuals appear in parentheses below group frequencies.

CAMHS. GP and family were categorised together as information provided by the GP (usually in referrals) are often concerns of the family; and non-CAMHS specialist teams included paediatricians, non-CAMHS and neurodevelopmental clinics (see Table 3).

There was a statistically significant association between the professional involved and the problems detected, $\chi^2(15) = 32.6, p = .005$. An adjusted standardised residual over 1.96 or below -1.96 indicates that there is a significant difference between the observed and expected value. This shows that in this sample, difficulties in language were identified most frequently by the EP; social communication difficulties were mostly identified by the CDC and behavioural difficulties most often mentioned by the GP or family.

c. Ongoing family and school concerns despite SLT noting no SLCDs

There were four children (22%) in the sample whose family and school expressed concerns regarding language abilities, despite SLTs concluding that their speech and language abilities were developmentally appropriate.

One child was referred to an EP prior to 2012 for an assessment due to concerns around his hyperactivity, language skills and learning. The EP reported that his mother found that it is 'difficult [for him] to reciprocate in conversation or to answer questions appropriately' and that the child 'frequently goes off on a tangent when questions are directed at him'. Following the assessment, the EP referred him to an SLT who ruled out any SLCDs. However, in 2012, another EP assessment was conducted which described him as having 'poor receptive language skills', 'poor social communication skills', difficulty in 'reciprocating appropriately in conversation' and that these difficulties were likely to affect his attention and concentration skills. Furthermore, according to his mother, there was a report (it was unclear from which source) that showed him to have reading and writing levels of a 5-year-old when he was 8 years of age.

Another example is a child who had an ASD assessment at age of 5 years, which identified the some SLCDs, including 'answers questions without giving full responses', 'some developmentally inappropriate behaviour', 'responds to questions with a shrug' and 'seems to lack social understanding'. According to his mother, he had achieved most developmental milestones at appropriate time except for speech and language. He had been assessed in the past (at age of 2 years) by an SLT and was found to have met typical developmental milestones. However, the case file reflected that

his mother still had concerns that his language is delayed after the assessment and that her child used to point to things instead of using words to communicate. At age of 6 years, another SLT assessed him and once again reported that he presented with age-appropriate language skills.

From these examples, it shows that some children who were assessed by SLTs in the past still present with certain difficulties according to the people in the child's system. This may suggest a disparity between a specialist's criteria of SLCDs and that of a family or school member.

d. Unclear follow-up of SLCD concerns

There was a recurring theme within the sample of the absence of information regarding follow-up to SLCD concerns when they were mentioned. This could be seen across professionals.

15 of the 18 cases in our study revealed current concerns regarding the child's speech, language and communication abilities. They were identified by either the EP or a CAMHS clinician. However, it was not clear whether further action was taken to assess the child's SLC abilities, such as a referral to an SLT.

For example, one child who had a formal diagnosis of ASD, learning disability and developmental delay, was referred to CAMHS due to challenging behaviour, but the referral also noted that he had recently developed a stammer and that his speech and language ability had regressed. It was mentioned that an SLT was involved in home visits due to the child being homeschooled, but this had stopped before the referral to CAMHS. It was not clear whether there was any subsequent SLT involvement or whether an SLT referral had been made to ensure that the child continued to receive SLT input for his difficulties.

Another case was assessed by an EP at age of 9 years and again at age of 12 years, and SLCDs were identified on both occasions. The EP mentioned that he had difficulties in the area of verbal skills and non-verbal reasoning, scoring 'below average range for all literacy tasks' and 'needed further development of his knowledge of spelling patterns and reading rules'. Most significantly, on the second occasion, the EP queried whether a referral to SLT had been made in the past and whether it would be suitable at that point in time. However, it was unclear whether the referral was indeed made as no information in the case file related to an SLT report or involvement.

Finally, a child who had continuous CAMHS involvement was previously thought to have a delay in speech development. His mother felt that 'his speech was advancing, though it is not always to follow him as he talks in a rush'. It was noted that by the CAMHS clinician that there was 'still no SLT' involved, though it was unclear whether a referral to SLT was made.

Discussion

The purpose of this study was to investigate whether any SLCDs were detected in cases referred with suspected ADHD or hyperactivity. If they were, then who made the diagnosis, at what stage in the episode of care and what follow-up action was taken. It was found that in the sample of 18 cases, 15 had displayed some form of SLCD. However, of the 15, few were identified and followed up by the professionals around the child, including CAMHS, which is consistent with previous findings of the underdiagnosis of SLCDs. Furthermore, of those that were suspected of SLCDs (by CAMHS or otherwise) and queried whether SLT interventions were appropriate, it was unclear whether there was follow-up of SLT assessments or interventions based on the case records in CAMHS. Several themes were also identified from the data set, which were relevant to ADHD, SLCDs and the process of identification. This section will discuss how the findings of this study relate to current literature and general implications on clinical practice.

Types of SLCDs in ADHD referrals

In the current data set, there were concerns about expressive and receptive language and about reciprocity in language. Concerns around poor social communication, such as having a tendency to dominate conversations, going off on a tangent in the middle of conversation or only speak about topics of the child's personal interest, were also common. This is consistent with research (e.g. Barkley, DuPaul, & McMurray, 1990) showing that children who have ADHD also often present with expressive and receptive language impairments. The social communication difficulties found in the current sample resembled impairments in pragmatic use of language (e.g. Kim & Kaiser, 2000). This could take the form of wandering off-topic during conversations, interrupting or overlapping, or not responding to verbal requests. Other social communication difficulties also found in this study were interacting with others in a developmentally inappropriate manner. This is consistent with descriptions of children with ADHD in other studies. SLCDs can directly affect a child's ability to maintain social and peer groups, as many cases in the current sample described poor social relationships. It also directly impacts children's learning, where they struggle to achieve the expected levels of attainment in school.

Age-appropriate abilities based on formal assessments versus school and family expectations

One of the themes identified described on-going SLCDs despite having been assessed as developmentally appropriate. These concerns were usually raised by parents or teachers, which at times prompted a re-assessment. These observations may prompt curiosity into revisiting what is considered age-appropriate speech and language development and how it relates to a school's expectations of their students. For example, if a child is found to be developmentally appropriate based on a formal assessment but is still struggling in school, could it suggest that schools may benefit from re-examining their expectations of students? Conversely, if schools have increased expectations of students, would that in turn affect the thresholds of what is considered developmentally appropriate from formal assessments? Further research on this area could be conducted to ensure that specialist thresholds are in line with the demands of a child's environment. Further, a child's SLCD needs are pervasive and often life-long, however depending on the age group, the child may wax and wane in meeting threshold for SLT interventions; as such, it may be more important to consider the child's needs and environment at any given time, rather than to only rely on clinical thresholds to determine eligibility for SLT interventions.

Implications on clinical practice

Increasing awareness of comorbidity and underidentification of SLCDs. Through informal interviews with CAMHS clinicians, it was found that most were aware of the comorbidity between SLCDs and ADHD, as well as other psychiatric conditions, but less were aware that SLCDs have found to be underidentified in clinical practice. Upon finding unsuspected SLCDs among children with emotional and behavioural difficulties in a school setting, Stringer and Lozano (2007) suggested that increase awareness and training of SLCDs among school teachers could help to increase the ability to detect these difficulties. Similarly, clinical settings may benefit from increased training and interaction with SLTs, as well as increased awareness of underidentification of SLCDs in the clinical population. This may prompt clinicians not only to screen for SLCDs in their routine practice but also to document it clearly in the likely event that the case is seen by another clinician concurrently or in the future.

Closer collaboration with SLTs may also be useful for clinicians who receive reports of formal assessment, for example, CCC-2 or BAS-II, for increased familiarity of the types of information that may be obtained from these assessments. The theme of Assessment and Identification of SLCDs in this study may also provide some insight into subtests and domains that a child with ADHD and SLCDs may perform poorly on. Understanding a child's speech, language and communication needs is essential in psychiatric evaluation, as most (if not all) aspects involve language and communication (Toppelberg & Shapiro, 2000).

Creating a structured process within clinical settings to screen for SLCDs. Our findings show how professionals of some disciplines are more likely than others to identify SLCDs. We have not found published information regarding routine SLCD screening in clinical practice. Given the problem of underidentification of SLCDs, there may be value in creating a structured process within generic assessments to ensure that SLCDs are routinely screened for. The process should also include clear follow-up actions to take, should a child score above a certain threshold, indicating possible SLCD concerns. This process should be applied to first-time referrals, as well as re-referrals, as our study has shown the possibility that a child may fall behind appropriate developmental milestones only during a re-assessment at a later age.

Ensuring proper follow-up when SLCDs are suspected. Our study highlighted that SLCDs are not always identified explicitly within CAMHS, and often, SLCDs are picked up and diagnosed by EPs who are external to CAMHS. This suggests that CAMHS clinicians are likely to have to refer a child to a different agency for follow-up assessments to address SLCD concerns, hence requiring multi-agency collaboration. Multi-agency collaborations have been emphasised as important and essential in providing holistic care, especially, in papers addressing the development of children's services; however, such collaborations are not without its challenges. For example, different agencies contain different professional types and may formulate a child's difficulties differently. As such, Salmon (2004) discussed the need for different agencies to establish a common understanding in the use of language and definitions before children can receive the services they require. In addition, inter-agency collaboration may pose logistical challenges in case management, as additional effort must be made by the referring professional to provide sufficient information, as well as to follow up on the outcome of the referral and assessments, if necessary. As such, clinical settings could consider setting up not only a routine process to screen for SLCDs but also one that includes a way of ensuring that referrals for further assessment and multi-agency collaborations are properly followed up and documented.

A transdiagnostic approach as an alternative to comorbidity. Kadesjo and Gillberg (2001) suggest that 'it is the exception not the rule, to encounter cases with "pure" ADHD' (p. 491). In the sample of 18 ADHD or hyperactivity referrals, 5 (28%) received diagnoses of both ADHD and ASD. This falls within the (broad) range of reported rates of comorbidity between ADHD and ASD, which has been estimated between 14% and 78% (Gargaro, Rinehart, Bradshaw, Tonge, & Sheppard, 2011).

Many have argued that there may be value in considering processes that may play a causal role in multiple disorders, often known as a transdiagnostic process (e.g. Nolen-Hoeksema & Watkins, 2011). There are several advantages to transdiagnostic processes rather than discrete disorder-focused approaches. First, similar processes are often seen in a number of different disorders (Cannon & Keller, 2006). A transdiagnostic approach would focus more on the underlying dysfunctional process. Comorbidity is the norm. For example, Kessler, Chiu, Demler and Walters (2005) found that over half of the individuals with one diagnosis met criteria for at least one other. Similarly, in this study, it was found that 5 of the 18 cases met criteria for both ADHD and ASD diagnoses. Certain disorders cluster together, suggesting commonalities within groups of disorders

(Watson, 2009). Furthermore, there is evidence that the stability of diagnoses within an individual is low, that is, individuals may meet criteria for a variety of disorders over time (Forrester, Owens, & Johnstone, 2001). If a transdiagnostic process can be identified to explain comorbidities, then assessment and training could focus more on these underlying factors rather than individual disorders. In addition, intervention focused on these transdiagnostic factors could have positive effects on all the disorders that they are related to (Mansell, Harvey, Watkins, & Shafran, 2009).

Conclusion

The results of this study are consistent with literature that suggests that there are many children who present with both ADHD symptoms and SLCD concerns. We have shown the different routes by which SLCDs were identified, and within this sample, it was often the EPs who initially queried SLCDs. Despite identification of the range of difficulties, there is a lack of evidence noted of following up on these concerns, that is, whether they were subsequently assessed or whether appropriate interventions were administered. These results suggest that a more systematic approach to SLCDs may be beneficial to the children and young people seen in CAMHS to increase the likelihood of better outcomes. This could include more explicit consideration and recording of SLCDs and its follow-up, especially, among children who present with ADHD traits. This would also increase the awareness of SLCDs between the different professionals around a child.

This study has limitations. The small sample size from one CAMHS may not be representative of children and young people attending other services. However, practitioners receive similar training across the country and work at different services, transporting practices with them; so there is sufficient reason to suspect that similar processes might operate in other settings. This study provides a starting point in further exploration of the factors that may contribute to the underidentification of SLCDs, as well as possible suggestions to reduce the occurrence of this phenomenon.

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