

## Research Report

# Pragmatic language and the child with emotional/behavioural difficulties (EBD): a pilot study exploring the interaction between behaviour and communication disability

Leila Mackie and James Law

Centre for Integrated Healthcare Research, Queen Margaret University, Musselburgh, UK

(Received 8 September 2008; accepted 8 June 2009)

### Abstract

*Introduction:* The relationship between mental health, behaviour and language development is widely recognized in the literature. Recent advances in assessment tools allows one to consider the role of pragmatic language skills in this co-occurrence.

*Aims:* This pilot study aimed to investigate (1) the level of association between pragmatic language difficulties and emotional/behavioural difficulties; and (2) what explanations there might be for any such association. The roles of language, word decoding, and non-verbal cognitive ability and also socio-demographic factors are considered.

*Method & Procedures:* Seventeen participants aged 7–11 years were identified from Educational Psychologist caseloads as having behaviour that is causing concern at school. Comparisons were made with 16 age- and sex-matched controls. Participants' language, literacy and non-verbal cognitive ability were assessed at school. Parents and teachers completed questionnaires investigating communication skills, behaviour and emotional wellbeing.

*Outcomes & Results:* No significant difference was found between the groups for non-verbal cognitive ability. However, children in the referred group were significantly more likely to have structural language, word decoding and pragmatic language difficulties and mothers with no further education beyond school. Taking a broad view of language skills to include structural language, pragmatic language and word decoding, 94% ( $n = 15$ ) of referred children had significant difficulties with at least one of these three factors. The only factor not found on its own was structural language difficulties, indicating that on their own they are perhaps not associated with emotional/behavioural difficulties.

*Conclusions & Implications:* The results of this pilot study have implications for how we view language and behaviour difficulties in primary schools. Future larger-scale research should consider the role of parenting factors, pragmatic language skills and literacy ability in the high co-existence rate of emotional/behavioural difficulties and language/communication needs.

*Keywords:* behaviour, children, emotion, language impairment, pragmatics, reading.

### What this paper adds

#### *What is already known*

Many studies have demonstrated that emotional/behavioural difficulties and language difficulties commonly co-occur together with estimates of co-existence rates at 40–90%. Studies show long-term negative outcomes for these children into adulthood. Studies have not made use of more up-to-date and standardized assessment of pragmatic language skills.

#### *What this paper adds*

Though the sample size is small, there are indications that language difficulties in themselves play less of a role in the incidence of emotional/behavioural difficulties than pragmatic language, word-decoding ability and low maternal education.

Address correspondence to: Leila Mackie, Centre for Integrated Healthcare Research, Queen Margaret University, Queen Margaret University Drive, Musselburgh EH21 6UU, UK; e-mail: lmackie@qmu.ac.uk

## Introduction

The relationship between emotional development, behaviour and language development is now widely recognized in the literature. Various studies have identified a high incidence of language/communication needs in children with emotional and behavioural difficulties (EBD) (for example, Cohen *et al.* 1993, 1998a, 1998b, Nelson *et al.* 2005, and Ripley and Yuill 2005). Additionally, many studies have also reported a raised incidence of EBD in children primarily identified with language difficulties (for example, Baker and Cantwell 1987, Redmond and Rice 1998, Conti-Ramsden and Botting 2000, Beitchman *et al.* 1996, 2001, Brownlie *et al.* 2004, and Lindsay and Dockrell 2000). Estimates of the proportion of children who have co-existing difficulties in these areas vary between approximately 40% to over 90% (Benner *et al.* 2002). This variation is likely due to the different placement of children sampled (that is, clinic versus school settings) and the widely varying criteria for classifying language difficulties through the use of different assessment tools and varying cut-off scores deemed 'impaired'.

Furthermore, the literature suggests that children with EBD may frequently have language difficulties that have not been recognized. Cohen *et al.* (1998a) found that of 380 children aged between 7 and 14 years of age consecutively referred to psychiatric services, and 40% had a language difficulty that had not been previously identified. It is possible that, this being the case, these children's performance in social and school situations will be misunderstood and viewed as due to behavioural issues rather than their underlying language and communication difficulties and may result in school exclusion. Indeed, Ripley and Yuill (2005) found high rates of language difficulties among a group of children who had been excluded from school. This highlights the need for consideration of the language and communication needs of children identified with significant EBD so that appropriate preventative supports can be put in place.

Most studies investigating this co-occurrence do not consider whether their language difficulties are 'specific' that is, the child has a discrepancy between scores on non-verbal and verbal cognitive assessment, with the child showing stronger skills in their non-verbal ability. This method is often used to identify children with specific language impairment (SLI). There is some controversy over SLI as a diagnosis. Some authors, such as Cole *et al.* (1990), Tomblin and Zhang (1999), Tomblin (2008) have argued that there is a lack of evidence for a difference in the patterns of language deficit between children with higher and lower non-verbal cognitive ability and that 'the use of cognitive referencing is neither conceptually well founded nor

supported by empirical evidence' (Tomblin 2008: 94). In the current paper the term Language Impairment (LI) will be used to refer to difficulties with structural language that may or may not be occurring alongside limitations in non-verbal cognitive ability.

Though it is well established that EBD and LI often co-occur, we still know little about *why* this is the case. As a start in determining this, a number of studies have considered whether difficulties with particular aspects of communication skills (that is, receptive language, expressive language or speech) more often co-occur with EBD. Though there are some studies that find that expressive difficulties more often co-occur, particularly amongst older children (Nelson *et al.* 2005, Ripley and Yuill 2005), most studies find receptive language difficulties (which most often present alongside expressive difficulties) are the highest risk indicator for EBD (for a review, see Toppelberg and Shapiro 2000). As yet we know little about how other factors beyond language skills interact or perhaps play a more significant role in the incidence of EBD in these children. There is evidence, for example, of the important role of literacy skills (for example, Maughan 1994). Furthermore our knowledge and ability to assess different aspects of communication have developed since many of these studies were carried out. In particular our ability to assess pragmatic language skills has progressed.

### *The role of literacy skills*

It is well established that there are strong links between language and literacy difficulties (for example, Catts *et al.* 2002). As well as reading comprehension difficulties, children with LI are at a higher risk of text decoding and spelling deficits due to the phonological impairment that is often part of their presentation (Snowling and Hayiou-Thomas 2006). Furthermore, studies also show a link between literacy and behavioural difficulties (for example, Maughan 1994). Indeed, in a study investigating the association between reading disability, behavioural disorder and language impairments, Tomblin *et al.* (2000) identified that reading disability was a mediating variable for children with impaired language who were presenting with co-existing behaviour disorders rather than the verbal language impairment per se being linked with the behavioural disorder. In other words, when the reading ability of participants was considered, verbal language ability on its own was no longer predictive of behavioural disorder.

### *The role of pragmatic language skills*

Pragmatic language impairment is a descriptive term that 'refers to difficulty with using language to convey and

understand intended meanings' (Adams *et al.* 2002: 974). Pragmatic language impairments are seen in children with autism spectrum disorder (ASD) in combination with impairment and differences in other areas of development. There is evidence that pragmatic language impairment can exist without an additional social impairment or learning disability (Bishop *et al.* 2000), although they commonly overlap. Difficulties with pragmatic language are commonly seen in children with LI. In more recent years there has been increasing interest in pragmatic language skills and how we can define, assess and provide appropriate intervention, particularly in the work of Adams, Lloyd, Aldred and Baxendale (for example, Adams *et al.* 2006) and Bishop (for example, Bishop *et al.* 2000, and Bishop and Norbury 2002).

#### *Pragmatic language impairment in children with EBD*

It is well recognized that children with behavioural disorders have problems with their social communication skills. Indeed Maag and Katsiyannis (1999), cited by Hill and Coufal (2005), go as far as to state that 'a lack of social competence is probably the one area of dysfunction that most uniformly describes students with EBD' (p. 36). However, despite this assumption little progress has been made in quantifying these for lack of an adequate assessment. The Children's Communication Checklist (CCC, and CCC-2; Bishop 1998, 2003) was developed to provide a more standardized means of identify children with pragmatic language difficulties than had previously been available. It identifies whether a child may have specific difficulties in aspects of pragmatics such as ability to use language appropriately in different contexts, non-verbal communication (including use and understanding of eye contact, facial expression and gesture) or their ability to use the context to understand a person's intended or implied meaning.

Gilmour *et al.* (2004) used the CCC to investigate the pragmatic language skills of children aged 5–10 years old with conduct disorder and compared their scores with children of the same age who had received a diagnosis of autism. They found that two thirds of children identified with conduct disorder actually had a pragmatic language impairment of a quality and degree similar to children on the autism spectrum; thus supporting their proposal that pragmatic language difficulties underlie antisocial behaviour in a proportion of children labelled as having conduct disorder. They also noted that both the ASD and the Conduct Disorder groups were predominately boys. They suspect a causal relationship between pragmatic language difficulties and school exclusion. However, they do state that it is important to acknowledge the

important roles that social, cognitive and psychological factors may play in engendering disruptive behaviour at school. They further state that 'these factors almost certainly interact with one another and contribute in a complex manner to that outcome' (p. 976). This lack of investigation into the role of other such factors is a limitation of their study.

#### *The current study*

The current study was thus designed as a pilot with two main aims:

- What is the level of association between pragmatic language skills and EBD? Can we replicate the high levels of pragmatic language difficulties found by Gilmour *et al.* (2004)?
- What explanations might there be for any such association? Preliminary investigations into social, cognitive and psychological factors, specifically language, literacy, non-verbal cognitive ability and socio-demographic factors were thus carried out to provide guidance for future larger-scale research.

#### **Method**

##### *Recruitment*

Discussion with an Educational Psychologist highlighted two points. Firstly, Conduct Disorder is seldom given as a diagnosis in Edinburgh. Secondly, it is generally from about their third year at school that behavioural issues become of greater concern in primary schools, as the behavioural expectations of the classroom increase and differences from their peers become more obvious. Therefore, it was decided that children at primary school over the age of 7 years would be recruited and, that rather than being selected through having a diagnosis, participants would be identified through having behaviour that is causing concern at school. Thus, Educational Psychologists across the City of Edinburgh were requested to inform the research team of children aged between 7 and 11 years old in mainstream schools who had been referred to their service within the last year due to concerns about their behaviour at school with the following exceptions: English as an additional language; a diagnosis of autism or autism spectrum disorder; documented evidence of a neurological impairment or sensory-neural hearing loss.

##### *Participants*

Twenty-five children were put forward by Educational Psychologists as meeting the above criteria. For eight of these children, parents or school declined consent or were

not contactable, leaving a final sample of 17 children. For each referred child, a child in the school was matched by age ( $\pm 3$  months) and sex to be included in the control group. Children in the control group were selected from the same school to try and ensure that they were from a similar socio-economic background. It was possible to match a control for all the referred children except one, making a total of 16 children in the control group. There were 13 boys and three girls in each group. The two groups were very similar in age. Referred group mean age = 9;00 years (range = 7;01–11;06 years); control group mean age = 8;11 years (range = 7;02–11;05 years),  $t(31) = 0.144$ ,  $p = 0.808$ .

### Procedure

Parents were sent a letter informing them of the project and then telephoned to talk through any queries they may have and obtain their verbal consent. If this was obtained, a meeting was arranged at their home or their child's school to obtain written consent, complete a parental questionnaire and the Strengths Difficulties Questionnaire (SDQ; Goodman 1999).

Children were tested individually in a quiet room at school by an experienced speech and language therapist who was familiar with the test materials. In nearly all cases, testing was completed in one session. The assessment session lasted between 1 and 1.5 hours. Teachers were given questionnaires on the day of assessment and were asked to complete them and post them to the researcher.

### Assessment battery

Participants were presented with the following assessments.

#### *Language measure: Assessment of Comprehension and Expression (ACE; Adams et al. 2001)*

This is a test of receptive and expressive language that includes investigation of structural language skills as well as some higher level aspects of language, such as the ability to make inferences. The main test, composed of the following sub-tests, was presented: Sentence Comprehension, Inferential Comprehension, Naming, Syntactic Formulation and Semantic Decisions. Raw scores for each subtest are converted into an overall Standard Score.

#### *Children's Communication Checklist, Version 2 (Bishop 2003)*

Class teachers of all participants were requested to complete the CCC-2 for each child. This well standardized checklist gives an indication of children's

ability to communicate in real-world environments as opposed to controlled test situations. Teachers are asked to indicate the frequency that certain communicative behaviours occur. The checklist consists of ten subscales that investigate ability in: Speech, Syntax, Semantics, Coherence, Inappropriate Initiation, Stereotyped Language, Use of Context, Non-verbal, Social Relations and Interests. Percentile scores standardized on a typically developing population can be obtained for each subscale. If a child scores below the tenth percentile in any subscale this indicates that the child may be impaired in this area. Therefore, this assessment has three main purposes:

- It distinguishes children with communication impairment from typically developing children through the calculation of a General Communication Composite (GCC) score.
- It identifies pragmatic language difficulties not typically picked up by other standardized assessment through the subscales investigating Coherence, Inappropriate Initiation, Stereotyped Language, Use of Context and Non-Verbal skills.
- It identifies children whose pragmatic language difficulties are disproportionate to their structural language skills through the Social Interaction Deviance Composite, which is a score calculated by taking a composite of the following subscales: Inappropriate initiation, Non-verbal communication, Social relations and Interests. These children should be further investigated for a possible diagnosis of ASD. Therefore, this score is intended to give an indication of social *interaction* difficulties of the type seen in autism rather than just investigating aspects of pragmatic *language* skills.

Bishop (2003) states that if a child has scores in three or more scales below the tenth percentile or two or more scales are at or below the fifth percentile, this suggests that the child may have communicative problems of clinical significance and warrants further investigation for a pragmatic language impairment.

#### *Non-verbal cognitive measure: Raven's Coloured Progressive Matrices (CPM; Raven 1998)*

This assessment gives an indicator of non-verbal ability, investigating perceptual and logic skills. Raw Scores are converted to a score within a percentile band.

#### *Literacy measure: McMillan Individual Reading Analysis (MIRA; Vincent and de la Mare 1992)*

This is a quick assessment of literacy skills in which children are asked to read short passages of increasing

**Table 1. SIMD decile ranking for children in both Referred and Control groups**

Group	SIMD decile band		
	Lowest bands (most deprived) (deciles 1–3)	Middle bands (deciles 4–6)	Highest bands (least deprived) (deciles 7–10)
Referred (number and percentage)	7 (41.2%)	6 (35.3%)	4 (23.5%)
Controls (number and percentage)	9 (56.3%)	5 (31.3%)	2 (12.5%)

difficulty and then asked questions about it. Scores are obtained for word-decoding ability and reading comprehension, indicating whether the child is performing within the average range for their age.

#### *Emotional and behavioural measure: Strengths and Difficulties Questionnaire (Goodman 1999)*

For the referred group, teachers and parents were requested to complete this well standardized screening questionnaire that asks about 25 attributes that can be divided into five sub-scales: Emotional symptoms, Conduct problems, Hyperactivity/inattention, Peer Relationships, Pro-social Behaviour. An impact supplement asks whether the respondent thinks the young person has a problem, and if so, enquires further about chronicity, distress, social impairment, and burden to others. Scores obtained indicate the child's level of risk of a diagnosis of an emotional or behavioural disorder.

#### *Socio-economic status measures*

The SIMD is the Scottish Executive's official tool for identifying small area concentrations of multiple deprivation across all of Scotland. SIMD 2006 divides Scotland up into 6505 small geographical areas (called 'data zones'), with a median population size of 769. These are ranked from one (most deprived) to 6505 (least deprived) using 37 indicators of deprivation across seven categories or domains: current income, employment, health, education, geographic access to services, housing and crime. These zones, which are calculated from full postcodes have been categorized into deciles, with the 1st decile the most and the tenth decile the least deprived areas.

#### *Maternal education*

Information was gathered about when mothers left school and whether they received any further education as this is also a recognized measure of socio-economic status (for example, Hart and Risley 1995).

#### *Parent's perspective and input from SLT*

##### *Parental questionnaire*

This was a short purpose made questionnaire investigating input the child has received from SLT, and the parent's view of their child's communicative ability.

#### **Results**

##### *Socio-economic status (SES)*

Table 1 illustrates the SIMD decile rankings for participants. As explained, the lowest ranked areas are in the 1st decile, and the highest ranked are in the tenth decile. Deciles have been grouped to give three categories: high, middle and low bands. The figure illustrates that the children from both groups came from a wide range of socio-economic areas.

The difference between groups in level of maternal education is illustrated in table 2. As can be seen a much higher percentage of the referred child's mothers left school at 16 years, receiving no further education, and this difference reached significance ( $p = 0.031$ , Fisher's exact test).

##### *Non-verbal cognitive ability*

Figure 1 illustrates the percentile scores in the Raven's coloured matrices (displayed as bandings between 1 and 5) obtained by children in the referred and control groups. Due to the small numbers in each group, parametric analysis was not appropriate. Non-parametric analysis, the Mann–Whitney test, on test standard scores indicated there was no significant difference between referred group

**Table 2. Maternal education of children in the Referred and Control groups**

Group	Mother received no further education	Mother received further education
Referred (number and percentage)	13 76.5%	4 23.5%
Controls (number and percentage)	5 33.3%	10 66.6%

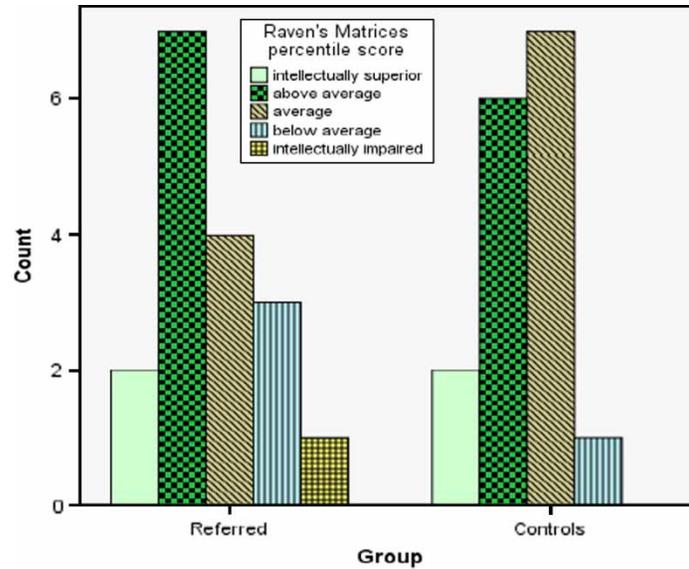


Figure 1. Banded percentile scores on the Raven's matrices.

(median = 106) and control group (median = 106) ( $U = 122.5, p = 0.637$ , two-tailed).

*Emotional and behavioural difficulties*

Analysis of the parent and teacher completed SDQs allows the calculation of diagnostic predictions of emotional and behavioural difficulties (EBD). Although these should be used cautiously, in a validation study Goodman (1999) found that these predictions agreed well with what an experienced

clinician diagnosed after a detailed assessment of the child.

Figure 2 illustrates that of the 16 children in the referred group with complete SDQ data, 94% ( $n = 15$ ) were at high risk of a diagnosis of EBD. The majority were at high risk of a behavioural disorder (87%,  $n = 14$ ), fewer at high risk of a hyperactivity disorder (56%,  $n = 9$ ) and fewer still at high risk of an emotional disorder (19%,  $n = 3$ ). The remaining participant was at medium risk of diagnosis of a behavioural disorder; the parent completed form

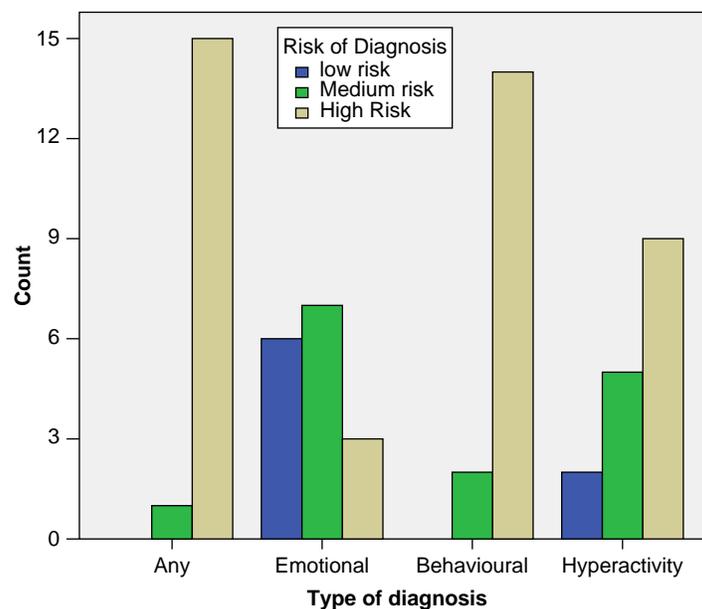


Figure 2. Diagnostic prediction from the SDQ for referred children.

indicated that most of his difficulties were at school only. Unsurprisingly these categories overlap.

### Language measures

#### Assessment of Language Comprehension and Expression (ACE)

The median overall percentile scores in the ACE for children in the referred group (median = 27) was significantly lower than for the control group (median = 65) ( $U = 72.50$ ,  $p = 0.021$ , two-tailed). However, as figure 3 illustrates, there was a greater range of percentile scores in the referred group (IQR = 63, minimum = 1, maximum = 99) compared with controls (IQR = 52.75, minimum = 25, maximum = 97) indicating more heterogeneity amongst the referred children. In total, 38% ( $n = 6$ ) of children in the referred group scored at or below the tenth percentile in this assessment indicating impaired language skills (LI), compared with zero children in the control group. All six of these children's scores indicated significant difficulties with both expressive and receptive language skills.

When information about maternal education levels from table 2 is combined with these scores, all six children who were identified as having LI had mothers with no further education. When information about non-verbal cognitive ability is combined with language scores, five of the above six children had scores above the 25th percentile in the Raven's matrices indicating more specific difficulties with their language skills. The remaining participant scored below the tenth percentile in both language and non-verbal cognitive assessment.

#### Literacy—reading ability (MIRA)

Figure 4a and b illustrate the numbers of children in each group who scored below, within and above the average range for reading accuracy (that is, word-decoding skills) in the MIRA. A total of 53% ( $n = 9$ ) of the referred group had reading accuracy skills below the average range, which was a significantly higher proportion than in the control group where 19% ( $n = 3$ ) scored at this level ( $\chi^2(1) = 4.164$ ,  $p = 0.041$ , two-sided). More referred children answered the accompanying questions correctly as 35% ( $n = 6$ ) of referred children scored below the average range for reading comprehension, compared with 12% ( $n = 2$ ) in the control group. This difference does not reach significance ( $\chi^2(1) = 2.332$ ,  $p = 0.127$ , two sided). It is of note that all six children with a LI scored below the average range for reading accuracy in this assessment. When we compare maternal education with literacy ability, all nine children with reading difficulties had mothers who left school at 16 years with no further education.

#### Pragmatic Language Skills (CCC-2)

Completed CCC-2 forms were returned by teachers for 30 of the 33 participants. The assessment scoring system includes a validity check designed to check whether the scorer understood the meaning of the ratings. Seven of the returned assessments were found to be invalid. This resulted in analysis being possible for eleven children in the referred group and twelve in the control group. Clearly these low figures have implications for the validity of the findings and thus the results can only be used as indicators for further investigation.

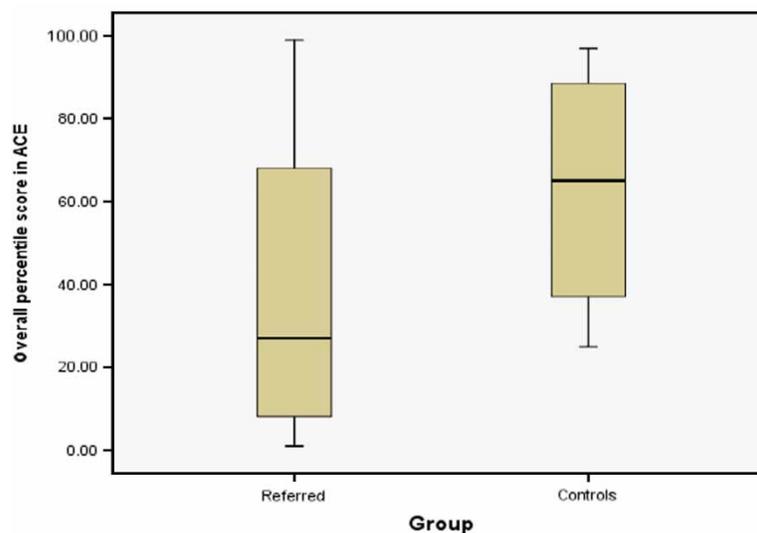


Figure 3. Total Score as Percentile in the ACE.

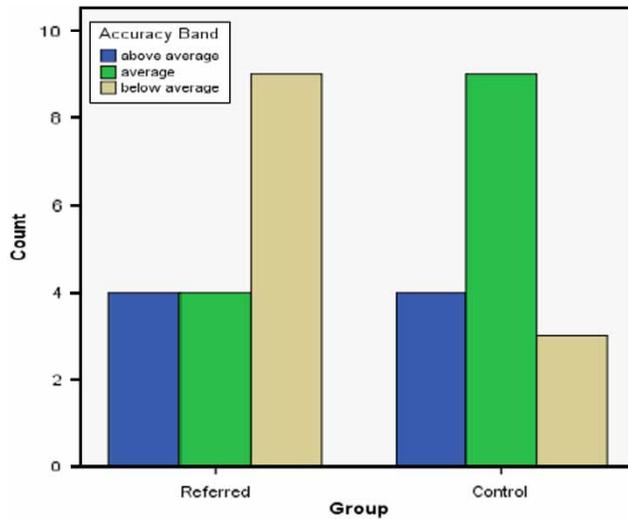


Figure 4a. Reading accuracy scores in the MIRA.

The CCC-2's main purpose is to distinguish children with communication impairments from typically developing children through the calculation of a General Communication Composite (GCC) score (Bishop 2003). The Box plots in figure 5 illustrate the difference in the GCC scores in referred and control groups. It can be seen that as a group, children referred to Educational Psychologists scored significantly lower than children in the control group ( $U = 23.00$ ,  $p = 0.001$ , two-tailed), indicating that their functional communication skills as perceived by their teacher are poorer than those of children in the control group. Median GCC for referred group 20.5 (IQR = 26.25, maximum = 45, minimum = 0.5) and median for control group 65 (IQR = 43, maximum = 96, minimum = 3).

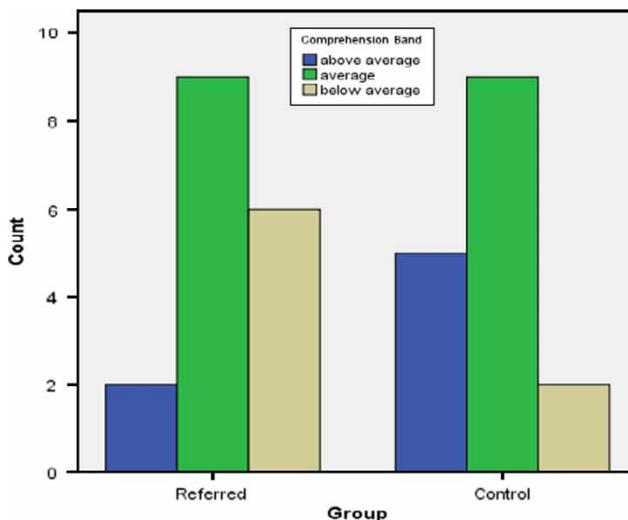


Figure 4b. Reading comprehension scores in the MIRA.

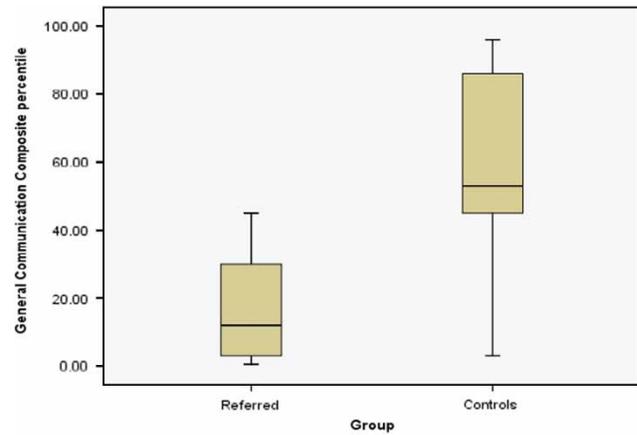


Figure 5. Scores on the General Communication Composite in the CCC-2.

### Scores on individual subscales measuring pragmatic language

Figure 6 illustrates box plots for the subscales that investigate pragmatic language skills. The referred group scored significantly lower than the control group in all subscales measuring pragmatic language skills: Coherence subscale ( $U = 16.50$ ,  $p = 0.01$ , two-tailed); Inappropriate initiation subscale ( $U = 21.50$ ,  $p < 0.001$ , two-tailed); Stereotyped language subscale ( $U = 37.50$ ,  $p = 0.001$ , two-tailed); Use of Context subscale ( $U = 39.50$ ,  $p = 0.002$ , two-tailed); Non-verbal subscale ( $U = 20.00$ ,  $p < 0.001$ , two-tailed).

Using Bishop's (2003) criteria for identifying pragmatic language difficulties that warrant further investigation, as explained in the methodology, the CCC-2 scores indicate seven out of the eleven referred children with valid forms warrant such investigations.

### Features of ASD

The referred group also scored significantly lower on both Social Relations subscale ( $U = 16.50$ ,  $p < 0.001$ , two-tailed) and Interests subscale ( $U = 19.50$ ,  $p = 0.003$ , two-tailed). These are included to pick up on the types of difficulties more indicative of autism. Figure 7 illustrates the difference between referred and control groups.

### Social Interaction Deviance Composite (SIDC)

The SIDC is designed to identify children who show clear pragmatic deficits, disproportionate to other aspects of their language, by taking a composite score of their ability in the inappropriate initiation, non-verbal, social relations and interests sub-scales in comparison to their scores in the sub-scales relating to language structure and content. According to Bishop (2003)

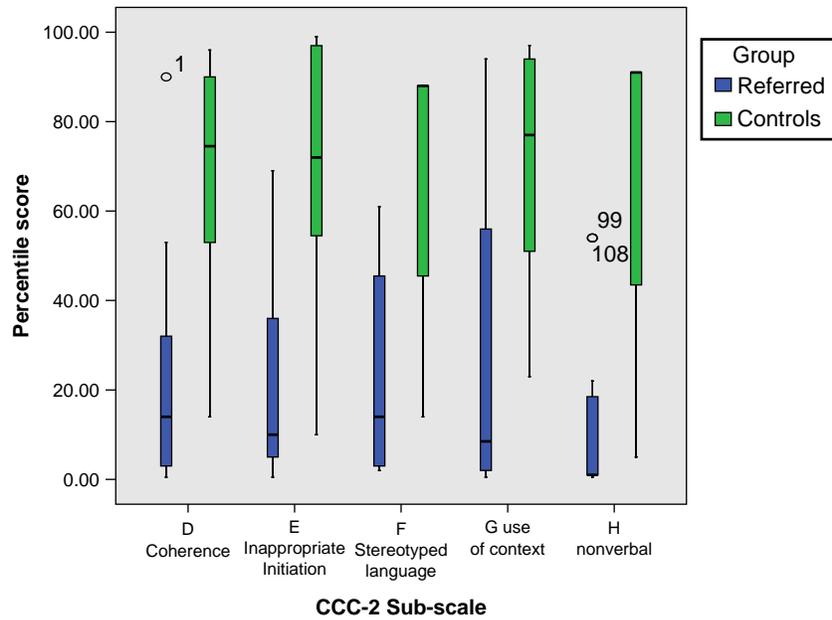


Figure 6. Box plots illustrating the range of percentile scores in both groups on CCC-2 scales for pragmatic language skills.

a negative SIDC score indicates their social interaction difficulties are disproportionate to other aspects of communication and a score of  $-15$  or below is indicative of a possible diagnosis of Asperger's syndrome. Of the above seven children in the referred group identified with pragmatic language difficulties, six obtained a negative SIDC score and of these three children obtained a score below  $-15$ . One child in the control group also scored in this range.

*Qualitative analysis of participants communication/literacy profiles*

It is possible to compare the pragmatic language ability of the eleven participants with valid CCC-2 results with their scores in language and literacy assessment. Taking such a broad view of language, 91% ( $n = 10$ ) had difficulty in at least one of these areas. Of these ten participants, most ( $n = 7$ ) had pragmatic language difficulties (with or without word decoding difficulties

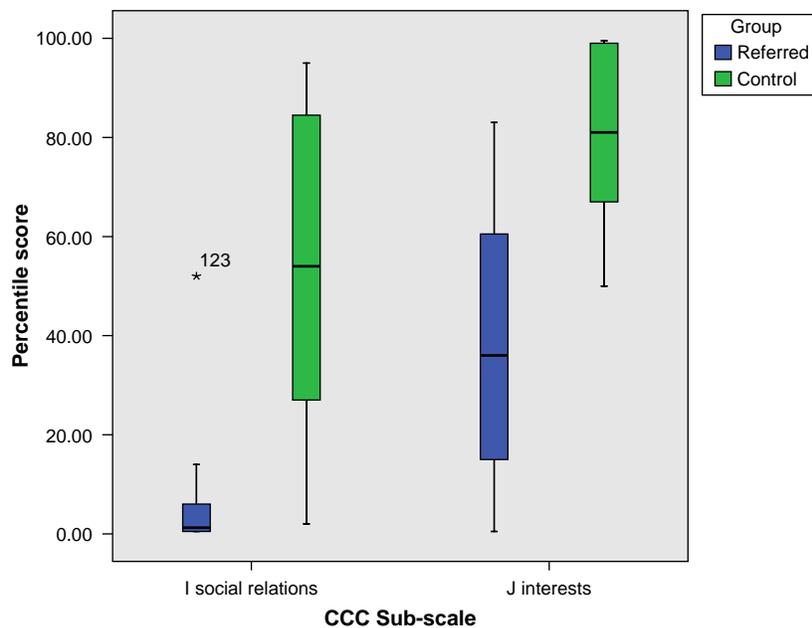


Figure 7. Box plots illustrating group range of percentile scores in CCC-2 sub-scales indicating autistic features.

or LI). The remaining children all had word decoding difficulties (with or without LI). No referred children had LI without accompanying pragmatic language or word decoding difficulties.

#### *Parent perception of communication ability and SLT involvement*

Of the 17 children in the referred group, concerns about communication were high as they were identified by the majority of parents ( $n = 13$ ). Only one child was currently receiving SLT input, however five parents reported that their child had been referred to SLT in the past (all pre-school) but were no longer receiving input. Four of these were children identified with LI through assessment in the current study. No children were identified with possible Asperger's syndrome.

### **Discussion**

#### *Comparison with Gilmour et al. (2004)*

This study achieved its objective to replicate Gilmour *et al.*'s (2004) findings. We found a similar proportion in our referred group (approximately two thirds) had significant pragmatic language difficulties. As found by Gilmour *et al.* and also in keeping with other research into language/communication difficulties and EBD there were considerably more boys than girls in the referred group.

There are, however, a number of considerations to be borne in mind when making comparisons. Firstly, as stated above, children in the Edinburgh area are seldom given a diagnosis of conduct disorder. Nevertheless, almost all referred children were found to be at high risk of a diagnosis of EBD according to their SDQ scores and of these the majority were at high risk of a behavioural disorder, a category that would include conduct disorder. All the same, it remains the case that our group, though similar, is not directly comparable with Gilmour *et al.*'s. Secondly, the CCC-2 used in the current study has a number of changes in the scoring system and test construction from the CCC as used by Gilmour *et al.* that are designed to allow a more accurate identification of ASD and pragmatic language difficulties. Finally, as already mentioned, the small number of participants and technically invalid forms demands caution when interpreting the current study's finding.

The high number of invalid CCC-2 forms is of concern. Closer analysis of the error types in these forms indicated that teachers tended to take a negative view of the child. The final section of the checklist required rating the child's communicative strengths, with items such as 'you can have an enjoyable and

interesting conversations with this child'; 'talks to others about their interests rather than their own'; and 'talks clearly about what he/she plans to do in the future'. Some teachers rated the child low in this section, though did not always identify specific communication difficulties in the previous section. There may be potential for further exploration of these issues in the future. As identified by Bishop and Baird (2001) having parent completed CCC-2 scores, with their perception of the child's communication in different contexts to combine with the teacher reports would have strengthened the results of this study.

#### *Investigations into social, cognitive and psychological factors*

#### *Non-verbal IQ*

It is perhaps surprising that non-verbal cognitive ability was not significantly different between the groups as there is evidence of a higher incidence of EBD in children with broadly defined 'intellectual disabilities' (for example, Baker *et al.* 2003) than the general population. However, previous research supports this finding. For example, Ripley and Yuill (2005) found no significant difference in non-verbal IQ between boys excluded from school and a control group matched on age, gender and school, though, as in the current study, language skills of the excluded boys were significantly poorer. It is of note that as in the present study non-verbal cognitive ability was measured using the Raven's matrices which is composed of only one test. A composite measure is accepted to give a more accurate indicator of ability (Sparrow and Davis 2000).

#### *Demographic factors*

It was assumed that as a child for the control group was selected from the same school as each referred child, SES in both groups would be very similar. In fact, though groups were similar in the SIMD ranking, there was a much lower level of maternal education in the referred group. There is evidence that maternal education is linked with a child's cognitive and language development. Specifically there is evidence that interactional style of the parent is a predictor of the child's development. Mothers with low education levels tend to have a more restrictive and authoritarian parenting style (Olson *et al.* 1992) and talk less with their children (Hart and Risley 1995). Both factors have been shown to have a negative impact on cognitive and language development (Ginsborg 2006).

However, though all children with LI had mothers with no further education, their very low language assessment scores suggest that their difficulties may be

due to more than a lack of stimulating language/cognitive environments, particularly as most had non-verbal cognitive scores within the average range. There is evidence for the heritability of language and communication difficulties (Bishop 2000). Whatever their cause, due to their nature, language and communication impairments are not always obvious and therefore the parenting experience is likely to be different to that of typically developing children and also of children with other more obvious disabilities or impairments. Future research should investigate the emotional wellbeing and coping style of parents of children with LI. To what extent does this contribute to the child's own emotional well-being and behaviour?

#### *Word-decoding skills*

A high proportion of referred children had word decoding difficulties (53%,  $n = 9$ ), including all six children with LI. This finding gives some support to Tomblin *et al.* (2000) who found that reading disorder took a mediating role in the incidence of behavioural difficulties in children with LI. However, a comparison group of children with LI and no word decoding difficulties would strengthen this support.

#### *Comparison of pragmatic language, language and word-decoding skills*

Taking a broad view of language to include pragmatic language, language and word-decoding skills, almost all referred children (91%) had difficulty of some kind, suggesting that communication difficulties of some sort very often accompany behavioural difficulties. The small sample size prevented regression analysis to compare the occurrence of these three factors and the relative predictive role that each of these played in whether a child will be referred to an Educational Psychologist. However, the fact that most referred children had pragmatic language difficulties and no referred child had LI without accompanying word decoding or pragmatic language difficulties is of interest when considering the role of LI in the incidence of EBD. When other commonly associated factors that often accompany LI are considered, the language difficulty on its own does not seem to be such a strong predictor of EBD as earlier studies suggest (for example, Toppberg and Shapiro 2000). More recent research, to a large part through the development of the CCC-2 (Bishop and Baird 2001, Bishop 2003, Norbury *et al.* 2006) has highlighted that children with LI often have accompanying pragmatic language difficulties. Indeed the results of the CCC-2 validation study (Norbury *et al.* 2006) found that the 'vast majority' of children with LI had significant pragmatic language difficulties,

and that even children with what Bishop terms 'typical SLI' (that is, were not identified as having pragmatic language difficulties) scored low on the pragmatic scales indicating more significant social communication limitations than is often considered in this group. Studies included in Toppberg's review and therefore before the development of the CCC, have not been able to consider the role of pragmatic language difficulties in such a standardized and systematic way.

The reasons for these pragmatic language difficulties are perhaps less clear. It is recognized that children with behavioural difficulties are often socially isolated (see, for example, Dodge *et al.* 2003). The resulting lack of opportunity to practice their social interaction skills with other children has been demonstrated to have a detrimental effect on a child's ability to develop social interaction skills at the same rate as their peers, resulting in an ever widening gap between their own and their peer's social abilities (Dodge *et al.* 2003). This cycle is likely to play a role to a varying degree in the difficulties identified for many, if not all, of the children with pragmatic language difficulties in our referred group. It is difficult, if not impossible, to determine the extent presenting difficulties are due to such a lack of practice, exposure and/or willingness or a more pervasive difficulty as is in keeping with a diagnosis of ASD. The CCC-2 allowed us to identify some diversity in the types of pragmatic language difficulties seen across the group, indicating variation in the contributing factors for different individuals. Three scored as though a diagnosis of ASD may be appropriate and four had perhaps less severe or at least more specific difficulties with social communication.

The results indicate difficulties with word decoding provide another possibly causal route to behavioural difficulties. The reasons for this can only be speculative, though frustration and awareness of the gap between their own and their peers abilities is likely to play a role. Future research with a larger participant group is necessary to confirm these findings and would also allow regression analysis to determine the relative predictive power of these factors in the incidence of EBD.

#### *Input from SLT*

The very low level of SLT involvement but high level of communication and language difficulties amongst this group highlights a high level of unmet need. The fact that many mothers in the referred group had low levels of education suggests that perhaps they are less able to argue the case their child's difficulties should be seen as a difficulty with communication rather than a behavioural difficulty. This is further supported by the majority of mothers reporting concern about their child's communication alongside the low level of SLT

involvement, indicating poor engagement with services. The reason for discharge from SLT was not investigated in this study. Though speculation, discharge due to non-attendance is a common problem for SLT clinics in socially disadvantaged areas (Cooper 1998) and highlights the need for SLT services to continue to develop ways to work effectively with these families.

Government projects such as Sure Start have made advances in the way we deliver support for the language and communication needs of children in social deprived areas. However, following the well-founded rationale for early intervention the focus has mostly been on the preschool child. The communication needs of these older children and their families as identified in the current study highlights that these language and communication difficulties all too often do not go away as the child goes through school. The evidence for long term negative outcomes for these children into adulthood (Beitchman *et al.* 2001, Brownlie *et al.* 2004), and the high incidence of language and communication difficulties amongst young offenders (Bryan 2004) further emphasizes the importance of developing ways to meet the communication needs of these children as a priority for future research and service development. Current political policy is increasingly recognizing this (Bercow 2008).

### *Limitations*

The criteria for recruitment onto the project included the requirement that participants are recent referrals to the Educational Psychologist service. In discussion with Educational Psychologists, many reported that they would have known about the majority of children who are presenting with these types of difficulties before age 7, through regular meetings with their schools. They often also reported awareness of the possible link between behavioural issues with language or communication difficulties and that they would often refer these children to SLT, and at a younger age than 7 years. Indeed it would be hoped that the many previous studies that have reported this co-morbidity, such as Cohen *et al.* (1998a, 1998b) and subsequent papers such as Law and Garrett (2004) that discuss the implications and necessary steps forward for service delivery would have made an impact on practice. This may to some extent be the case, at least at a local level and may have affected recruitment rates. Thus, though always intended as a pilot study, the number of participants was small and it was not possible to carry out a regression analysis. Additionally the high number of technically invalid CCC-2 forms returned by teachers further reduced the number of participants whose results could be used for some of the analysis. As mentioned above, the results would have been

strengthened by requesting parents to complete the CCC-2 as well as teachers as the two combined has been recognized as giving more reliable information (Bishop and Baird 2001). It also should be born in mind that the SDQ and CCC-2 are only screening questionnaires. Full investigations of both EBD and pragmatic language/social interaction skills are necessary to confirm any diagnosis. Finally an assumption was made that as the SDQ is standardized it would be unnecessary to collect SDQ data on the control group. However, this is an assumption and the design would have been improved by collecting SDQ scores for all participants.

### *Implications for practice and future research*

The study highlights the fact that too often children are seen as having either a language difficulty or a behavioural difficulty when in reality they may have both. There needs to be more awareness and consideration of the possible overlap between the two. These children have complex individual presentations where the combined expertise of integrated services and multidisciplinary teamwork is the most effective. The combined expertise of SLT, teaching staff, Educational Psychologist and learning assistants should be drawn on to develop and deliver tailor made programmes of intensive input for each individual child. The results indicate that we need to develop interventions for pragmatic language difficulties in this group of children, as well as targeting literacy and structural language. Due to the high level of non-engagement with SLT, input should be delivered at school, ideally linking in closely with the child's home. As suggested by Law and Garrett (2004) we need to develop services to allow us to do this.

### **Summary and conclusions**

This pilot study has implications for how we view behaviour and communication skills in primary schools. It seems that factors commonly associated with LI play a more important role in the incidence of EBD than the language difficulties in themselves. Through the use of a more standardized assessment of pragmatic language skills it has been possible to assess more fully the underlying pragmatic language ability of children with EBD to consider whether they have more pervasive difficulties with the underlying pragmatic skills rather than a lack of exposure, practice or willingness affecting their social competence, though this is also likely to play a role. There is evidence supporting the work of Gilmour *et al.* (2004) that a high proportion of these children have pragmatic language difficulties. High levels of word-decoding

difficulties and low levels of maternal education were also found in the referred group indicating that these areas are also important for future research.

### Acknowledgements

The authors would like to express their appreciation and thanks to all the children and schools in the City of Edinburgh who took part in this study. Special thanks go to Martin Gemmell, Educational Psychologist, City of Edinburgh Council, for his help and advice in setting up the study and for his comments on the manuscript; and all the Educational Psychologists in Edinburgh who helped identify participants. Thanks also go to Ann Clark, Lecturer, Speech and Hearing Sciences, Queen Margaret University, Edinburgh, for her comments on the manuscript. The Centre for Integrated Healthcare Research, Queen Margaret University, Edinburgh funded this project (Grant number: CIHR/2005/PP/09).

**Declaration of interest:** The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

### References

- ADAMS, C., COOKE, R., CRUTCHLEY, A., HESKETH, A. and REEVES, D., 2001, *Assessment of Comprehension and Expression 6–11* (Chiswick: NFER-Nelson).
- ADAMS, C., GREEN, J., GILCHRIST, A. and COX, A., 2002, Conversational behaviour of children with Asperger's syndrome and conduct disorder. *Journal of Child Psychology and Psychiatry*, **43**, 679–690.
- ADAMS, C., LLOYD, J., ALDRED, C. and BAXENDALE, J., 2006, Exploring the effects of communication intervention for developmental pragmatic language impairments: a signal-generation study. *International Journal of Language and Communication Disorders*, **41**, 41–65.
- BAKER, B. L., MCINTYRE, L. L., BLACHER, J., CRNIC, K., EDELBROCK, C. and LOW, C., 2003, Pre-school children with and without developmental delay: behaviour problems and parenting stress over time. *Journal of Intellectual Disability Research*, **47**, 217–230.
- BAKER, L. and CANTWELL, D. P., 1987, A prospective psychiatric follow-up of children with speech/language disorders. *Journal of the American Academy of Child and Adolescent Psychiatry*, **26**, 546–553.
- BEITCHMAN, J. H., BROWNLIE, E. B., INGLIS, A., WILD, J., FERGUSON, B. and SCHACHTER, D., 1996, Seven year follow-up of speech/language impaired and control children: psychiatric outcomes. *Journal of Child Psychology and Psychiatry*, **37**, 961–970.
- BEITCHMAN, J. H., WILSON, B., JOHNSON, C. J., ATKINSON, L., YOUNG, A., ADLAF, E., ESCOBAR, M. and DOUGLAS, L., 2001, Fourteen-year follow-up of speech/language-impaired and control children: psychiatric outcome. *Journal of the American Academy of Child and Adolescent Psychiatry*, **40**, 75–82.
- BENNER, G. J., NELSON, J. R. and EPSTEIN, M. H., 2002, Language skills of children with EBD. *Journal of Emotional and Behavioural Disorders*, **10**, 43–59.
- BERCOW, J., 2008, *The Bercow Report: A Review of Services for Children and Young People (0–19) with Speech, Language and Communication Needs*. July (London: Department of Children, Schools and Families) (available at: <http://www.dcsf.gov.uk/slcnaaction>).
- BISHOP, D. V. M., 1998, Development of the Children's Communication Checklist (CCC): a method for assessing qualitative aspects of communication impairment in children. *Journal of Child Psychology and Psychiatry*, **39**, 879–891.
- BISHOP, D. V. M., 2000, *Speech & Language Impairments in Children: Causes, Characteristics, Intervention and Outcome* (Oxford: Psychology Press).
- BISHOP, D. V. M., 2003, *The Children's Communication Checklist*, 2nd edn (London: Psychological Corporation, Harcourt Assessment).
- BISHOP, D. V. M. and BAIRD, G., 2001, Parent and teacher report of pragmatic aspects of communication: use of the Children's Communication Checklist in a clinical setting. *Developmental Medicine and Child Neurology*, **43**, 809–818.
- BISHOP, D. V. M., CHAN, J., ADAMS, C., HARTLEY, J. and WEIR, F., 2000, Conversational responsiveness in specific language impairment: evidence of disproportionate pragmatic difficulties in a subset of children. *Development and Psychopathology*, **12**, 177–199.
- BISHOP, D. V. M. and NORBURY, C., 2002, Exploring the borderlands of autistic disorder and specific language impairment: a study using standardised diagnostic instruments. *Journal of Child Psychology and Psychiatry*, **43**, 917–929.
- BROWNLIE, E. B., BEITCHMAN, J. H., ESCOBAR, M., YOUNG, A., ATKINSON, L., JOHNSON, C., WILSON, B. and DOUGLAS, L., 2004, Early language impairment and young adult delinquent and aggressive behavior. *Journal of Abnormal Child Psychology*, **32**, 453–467.
- BRYAN, K., 2004, Preliminary study of the prevalence of speech and language difficulties in young offenders. *International Journal of Language and Communication Disorders*, **39**, 391–400.
- CATTS, H. W., FEY, M. E., TOMBLIN, J. B. and ZHANG, X., 2002, A longitudinal investigation of reading outcomes in children with language impairments. *Journal of Speech, Language, and Hearing Research*, **45**, 1142–1157.
- COHEN, N., BARWICK, M. A., HORODEZKY, N. B., VALLANCE, D. D. and IM, N., 1998a, Language, achievement, and cognitive processing in psychiatrically disturbed children with previously identified and unsuspected language impairments. *Journal of Child Psychology and Psychiatry*, **39**, 865–877.
- COHEN, N. J., DAVINE, M., HORODEZKY, N. and LIPSETT, L., 1993, Undiscovered language impairment in psychiatrically disturbed children: prevalence and language and behavioral characteristics. *Journal of the American Academy of Child and Adolescent Psychiatry*, **32**, 595–603.
- COHEN, N. J., MENNA, R., VALLANCE, D. D., BARWICK, M. A., IM, N. and HORODEZKY, N. B., 1998b, Language, social cognitive processing, and behavioral characteristics of psychiatrically disturbed children with previously identified and unsuspected language impairments. *Journal of Child Psychology and Psychiatry*, **39**, 853–864.
- CONTI-RAMSDEN, G. and BOTTING, N., 2000, Social and behavioural difficulties in children with language impairment. *Child Language Teaching and Therapy*, **16**, 105–120.
- COOPER, M., 1998, Inclusive services for excluded communities. *Royal College of Speech and Language Therapy Bulletin*, **November**, 11–12.
- DODGE, K. A., LANSFORD, J. E., BURKS, V. S., BATES, J. E., PETTIT, G. S., FONTAINE, R. and PRICE, J. M., 2003, Peer rejection and social information-processing factors in the development of aggressive behavior problems in children. *Child Development*, **74**, 374–392.
- GILMOUR, J., HILL, B., PLACE, M. and SKUSE, D. H., 2004, Social communication deficits in conduct disorder: a clinical and

- community survey. *Journal of Child Psychology and Psychiatry*, **45**, 967–978.
- GINSBORG, J., 2006, The effects of socio-economic status on children's language acquisition. In J. Clegg and J. Ginsborg (eds), *Use in Language and Social Disadvantage: Theory into Practice* (Chichester: Wiley), 9–27.
- GOODMAN, R., 1999, The extended version of the SDQ as a guide to child psychiatric caseness and consequent burden. *Journal of Child Psychology and Psychiatry*, **40**, 791–800.
- HART, B. and RISLEY, T. R., 1995, *Meaningful Differences in Everyday Experiences of Young American Children* (Baltimore, MD: Paul H. Brookes).
- HILL, J. W. and COUFAL, K. L., 2005, Emotional/behavioral disorders: a retrospective examination of social skills, linguistics, and student outcomes. *Communication Disorders Quarterly*, **27**, 33–46.
- LAW, J. and GARRETT, Z., 2004, Speech and language therapy: its potential role in CAMHS. *Child and Adolescent Mental Health*, **9**, 50–55.
- LINDSAY, G. and DOCKRELL, J., 2000, The behaviour and self-esteem of children with specific speech and language difficulties. *British Journal of Educational Psychology*, **70**, 583–601.
- MAAG and KATSIYANNIS, 1999, Teacher Preparation in EBD: A National Survey in Behavioral Disorders. **24**, pp. 189–196.
- MAUGHAN, B., 1994, Behavioural development and reading disabilities. In C. Hulme and M. Snowling (eds), *Reading Development and Dyslexia* (Philadelphia, PA: Whurr), pp. 128–143.
- NELSON, J. R., BENNER, G. J. and CHENEY, D., 2005, An investigation of the language skills of students with emotional disturbance served in public school settings. *Journal of Special Education*, **39**, 97–105.
- NORBURY, C., NASH, M., BAIRD, B. and BISHOP, D. V. M., 2006, Using a parental checklist to identify diagnostic groups of children with communication impairment: a validation of the Children's Communication Checklist—2. *International Journal of Language and Communication Disorders*, **39**, 345–364.
- OLSON, S. L., BATES, J. E. and KASKIE, B., 1992, Caregiver–infant interaction antecedents of children's school age cognitive ability. *Merrill-Palmer Quarterly*, **28**, 309–330.
- RAVEN, J., RAVEN, J. C. and COURT, J. H., 1998, *Raven's Progressive Matrices* (Oxford: Oxford University Press).
- REDMOND, S. M. and RICE, M. L., 1998, The socioemotional behaviors of children with SLI: social adaptation or social deviance? *Journal of Speech Language and Hearing Research*, **41**, 688–700.
- RIPLEY, K. and YUILL, N., 2005, Patterns of language impairment in boys excluded from school. *British Journal of Educational Psychology*, **75**, 37–50.
- SNOWLING, M. J. and HAYIOU-THOMAS, M. E., 2006, The dyslexia spectrum: continuities between reading, speech, and language impairments. *Topics in Language Disorders*, **26**, 110–126.
- SPARROW, S. S. and DAVIS, S. M., 2000, Recent advances in the assessment of intelligence and cognition. *Journal of Child Psychology and Psychiatry*, **41**, 117–131.
- TOMBLIN, J.B., 2008, Validating diagnostic standards for specific language impairment using adolescent outcomes. In C. F. Norbury, J. B. Tomblin and D. V. M. Bishop (eds), *Understanding Developmental Language Disorders* (Psychology Press: Taylor Francis Group, Hove), 93–114.
- TOMBLIN, J. and ZHANG, X., 1999, Language patterns and etiology in children with specific language impairment. In H. Tager Flusberg (ed), *Neurodevelopmental Disorders* (Cambridge: MA, USA), 361–382.
- TOMBLIN, J. B., ZHANG, X., BUCKWALTER, P. and CATTS, H., 2000, The association of reading disability, behavioural disorders and language impairment among second-grade children. *Journal of Child Psychology and Psychiatry*, **41**, 473–482.
- TOPPELBERG, C. O. and SHAPIRO, T., 2000, Language disorders: a 10-year research update review. *Journal of the American Academy of Child and Adolescent Psychiatry*, **39**, 143–152.
- VINCENT, D. and de la MARE, M., 1992, *Individual Reading Analysis (MIRA)* (London: NFER-Nelson).