

Better communication research programme: 2nd interim report

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This research report was commissioned before the new UK Government took office on 11 May 2010. As a result the content may not reflect current Government policy and may make reference to the Department for Children, Schools and Families (DCSF) which has now been replaced by the Department for Education (DFE).

The views expressed in this report are the authors' and do not necessarily reflect those of the Department for Education.

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EXECUTIVE SUMMARY

The Better Communication Research Programme is part of the Better Communication Action Plan, the government's response to the Bercow Review¹, published in 2008. The aims of the BCRP are to provide:

- An understanding of the cost-effectiveness of different interventions used to support children and young people with SLCN and the factors that influence their efficiency including: locational issues (e.g. special school, integrated resource, mainstream); pedagogic issues (e.g. specific programmes for specific needs); organisational issues (e.g. nature and deployment of support services, use of data informed developments); and employer base interaction issues (e.g. use of consultancy model verses direct teaching/therapy).
- Identification of good practice and developing recommendations that can be incorporated into guidance, future policy and commissioning frameworks to improve services for children and young people with SLCN.

The BCRP focuses on children and young people with speech, language and communication needs (SLCN). This is the term used by the Department for Education to refer to pupils with *primary* language difficulties (as opposed to, for example, children with language difficulties associated with hearing impairment). However, the Bercow Review used this term in a broader, inclusive sense to cover children with all forms of speech, language and communication needs from whatever cause. This issue is addressed in the report.

This 2nd Interim Report provides information on the work of the BCRP that mainly took place during the period July 2010 – July 2011. During this time we have built on the work in Year 1 and also undertaken new projects. The BCRP is designed so that the different strands will provide complementary evidence wherever possible and that subsequent work will be determined by the emerging evidence.

The report therefore provides a summary of the aims of each study, what was done and the results so far. In some cases work is ongoing and will end in March 2012, in others the project is now complete. The range of activities reported is wide and we essentially report

¹ Bercow, J. (2008) *A review of services for children and young people (0-19) with speech, language and communication needs*. Nottingham: DCSF

separate projects. We will be pulling the different results together for the final report in spring 2012 when we will be integrating the results from the different projects.

Communication Supporting Classrooms

- The first stage of this study is complete. A Communication Supporting Classroom Observation Checklist for Early Years and Key Stage 1 was devised following a review of the research literature and piloted in 24 schools in reception and Years 1 and 2.
- The Checklist comprises three scales:
 - Language Learning Environment
 - Language Learning Opportunities
 - Language Learning Interventions
- The Checklist has good reliability
 - 83% agreement between raters for the Language Learning Environment domain.
- In the next phase:
 - The schools will be revisited to examine stability in these schools and new schools will be visited to broaden the scope.
 - Training will be provided to school staff in the use of the Checklist
 - After training the staff will use the Checklist and its reliability when used by front line staff (rather than researchers) will be examined.

Pupils with Speech Language and Communication Needs (SLCN) and Autism Spectrum Disorder (ASD): Prevalence and academic progress

- This study extends that reported in the 1st Interim Report, testing out the implementation and meaning of earlier findings and broadening the scope to include an ASD sample.
- The study utilised the national data sets: Pupil Level School Census (PLASC) and the National Pupil Database.
- The analysis focused particularly on transition made by pupils into and out of different categories of SEN and the factors associated with these.
- The findings include:
 - The prevalence of pupils designated as having SLCN varies over time, with the percentage of those at School Action Plus reducing over key stages 1 and 2.

- The pattern for pupils with ASD differs, showing a more consistent prevalence across the ages, although rising gently to age 12 then reducing.
- Unlike SLCN, there is a consistently greater proportion of children with ASD who have statements rather than support at School Action Plus (SAP).
- Being socially disadvantaged and having English as an Additional Language were associated with pupils being identified as having SLCN, especially those at SAP but this was not the case for those pupils with ASD.
- Low achievement was a risk factor for both groups, but more so for those with SLCN.
- There was substantial movement during secondary school into and out of the SLCN and ASD categories, with most movement occurring at transition between primary and secondary school.
 - Of those with non-statemented SLCN (School Action Plus) at the start of KS3, a quarter move into non-SEN, just under a fifth remain in the non-statemented SLCN category and a further fifth move into another type of non-statemented SEN.
 - The most common categories they move into are Moderate Learning Difficulties (MLD) and Specific Learning Difficulties (SpLD).
- There is less movement for pupils with ASD
 - 41% remain in this category at the end of Key Stage 3.
 - Those moving out of non-statemented ASD who moved into another SEN category are most likely to move into Behavioural, Emotional and Social Difficulties (BESD) and MLD.
 - For those initially with statement for ASD, the main moves out are into MLD, closely followed by SLCN
- Those who entered secondary schools with SLCN *and also* English as an additional language (EAL) were much more likely to move out of SLCN by age 14 years.
- There were also important associations between moving out of an SEN category and school context, e.g.
 - Pupils attending a higher achieving school are more likely to move from ASD to non-SEN, but this does not apply to pupils with SLCN
 - Attenders at a socio-economically deprived school (high percentage with entitlement to a free school meal) are not more or less likely to make a transition out of either SLCN or ASD into non-SEN.

A survey of Speech and Language Therapists

- A National survey of the use of interventions by speech and language therapists (SLTs) working with children in England produced 576 responses.
- The main common patterns of interventions were
 - With 5 – 7 year olds
 - With primary language difficulties
 - In mainstream schools
 - But with a substantial range in all cases
- A total of 38 programmes were specified, the most common being: the Derbyshire Language Scheme (65% SLTs), Makaton (58%), Nuffield-dyspraxia (47%), Core Vocabulary (40%) and Hanen (39%).
- Eleven interaction activities were reported, the most common being phonological awareness tasks (67%), barrier games (66%), audiology dissemination activities (64%), audiology memory activities (62%) and narrative therapy (59%).
- Twenty six different principles/activities were reported, the most common being modelling (96%), forced alternatives (84%), repetition (84%), visual approaches to support language (83%), and reducing distractions (82%).
- Three quarters of SLTs delivered interventions regularly,
 - 42% asking others (e.g. teachers, parents) to deliver it more frequently between visits,
 - 29% used this additional support less often.
- The most common frequency of delivery was once a week and the most common length was 6 weeks or more (89%).

Prospective Longitudinal Study – Phases 2 and 3

Our sample comprises four groups of children, initially 6, 8, 10 or 12 years of age, namely: those with specific language impairment (SLI), language impairment with low nonverbal ability (LI low NV) autism spectrum disorder (ASD), and autism spectrum disorder with low nonverbal ability (ASD low NV). We are investigating both similarities and differences in these children's needs and the ways in which schools address those needs.

- With respect to language:
 - All four groups had depressed receptive and expressive language scores
 - On average children with ASD performed better in areas of structural language than children with SLI or LI low NV.

- There was a significant overlap *between* the groups, demonstrating the variability *within* the groups and highlighting implications for teaching needs.
- With respect to literacy
 - Children with ASD had scores for single word reading, reading comprehension and spelling within the average range.
 - Children with SLI and those with LI low NV had depressed scores on all three literacy measures.
 - The ASD and the ASD low NV groups outperformed the SLI and LI low NV groups on both single word reading and spelling.
 - Performance for reading comprehension was significantly higher for the ASD groups than all other groups, who did not differ between themselves.
 - In the writing task, children with LI low NV produced the fewest words and significantly fewer than children with ASD.
- With respect to social communication
 - The ASD group was significantly more impaired than the SLI and LI low NV groups on measures of social interaction.
 - The SLI group experienced significantly more difficulties in structural aspects of language (speech syntax).
 - The ASD group has significantly higher levels of social interaction deviance than the SLI and SLI low NV groups.

Language and Literacy Attainment of Pupils during Early Years and through KS2

- The study examined whether teacher assessment at the end of the Early Years Foundation Stage (aged 5 years), based on ongoing observation, provides a valid measure of children's current development and their educational attainment in future years.
- Three cohorts of children in 50 primary schools were followed up over 3 years (N = 5378).
- There were correlations between the Communication Language and Literacy scales of the Early Years Foundation Stage Profile and later reading and mathematics: explaining about 50% of the differences between children.
- The study showed that teachers can make valid judgments and accurately monitor their pupils' progress in key reading skills.
- The risk factors for poor later educational attainment, also included gender (boys), having English as an additional language and coming from a socioeconomically disadvantaged background.

Speech, Language and Communication Needs and Behaviour

- Two studies were carried out to examine the relationship between SLCN and behavioural, emotional and social difficulties
 - A community, secondary school sample of 352 Year 7 pupils (age 12 years)
 - A clinical sample of children who attended a specialist tertiary centre and had been diagnosed with specific language impairment (SLI), autism spectrum disorder (ASD) or ASD with language impairment, and their unaffected siblings (total sample = 252).
- Both samples had significantly higher levels of BESD than a typically developing population
- Language ability was generally not associated with behavioural difficulties in either sample
- Behavioural difficulties were, by contrast, associated with low educational attainment.
- Children with ASD, whether or not they also had a language impairment, had higher levels of BESD than those with SLI or the unaffected siblings.
- This pattern of relationships found in two very different samples suggests that the key factors associated with behavioural difficulties are *social communication* (but not structural language difficulties) and *academic performance*.

Parents' Preferred Outcomes for their Children

- Ninety parents completed a survey to identify their priorities for their children who ranged in ages from 4 months to 19 year;
- The children had a variety of difficulties including ASD (57%), learning difficulties (44%), and expressive difficulties (40%); and attended a range of schools, including mainstream (34%), special school (35%) and either an ASD (10%) or language (6%) resource base.
- Over 90% of parents gave their priorities as independence, staying safe and communication compared with only about a third specifying academic achievements.
- These results may reflect the sample characteristics but there was no difference between parents of children with different types of difficulty in terms of their prioritisation of independence and inclusion as important priorities.
- The study includes the need to assess and monitor these factors as well as academic attainment if parents' priorities for their children are to be respected.

Economic effectiveness

Four stands of work have been developed. Interim findings are as follows:

- *Comparison of service provision and social disadvantage for children with SLCN across health and education sectors.*
 - The number of children identified with SLCN was higher in the education system than the number of children referred for speech and language therapy in the health system.
 - The number of children with SLCN in primary but not secondary schools was related to social disadvantage but use of NHS resources was related to social disadvantage for both age ranges.
 - The number of speech and language therapy staff was associated with the level of SLCN in primary but not secondary schools.
- *Review of the cost effectiveness literature related to provision for children with primary speech and language difficulties.*
 - There is a dearth of studies: only five were identified and most compared clinic-based and parent-administered interventions.
 - It is important to include both education and health service costs where applicable *and* to take account of the 'costs' of parental involvement.
- *Estimating unit costs of speech and language therapy for children with primary speech and language difficulties.*
 - Unit costs are commonly under-estimated, e.g. considering only salaries rather than full costs.
 - We identify four challenges to estimating unit costs and why such an approach is important.
 - providing detailed *descriptors*
 - *identifying* the activities of the service and relevant unit of measurement
 - *estimating* cost implications of all service elements identified
 - *calculating* the unit costs by totalling the costs of each service and dividing this by the number of 'units' of interest.
- *'Dosage' and provision for children with SLCN: the relationship of effect size to intensity duration and amount of intervention.*
 - We reanalysed the data from the 2003 Cochrane review
 - Our conclusions are *tentative* at present; data from more studies are necessary to confirm these indications, namely:

- For interventions targeting phonology overall amount and intensity are associated with effect size but duration is not, suggesting that intensive interventions are likely to perform better than those of long duration.
- For improvements in syntax, the data suggest that duration is key; longer, more drawn out interventions are more effective.
- For improvements in vocabulary a third picture emerges from the data: although longer duration brings better vocabulary outcomes, more intensive intervention does not necessarily do so. This suggests that regular short bursts of intervention over a longer period may be the optimum model of service delivery for those aiming to promote vocabulary development.

Prospective Study of SLT Services for Young Children who Stammer in England

- The study is just starting
- The difficulties of carrying out a complex study in a number of different health trusts are explored
 - Although the ethical approval was reasonably satisfactory, meeting Research and Development Governance requirements was often problematic
- The experience so far suggests that there are major problems with the current system which seriously weakens its fitness for purpose, reduces cost effectiveness and efficiency of the research process and ultimately undermines the carrying out of practice and policy relevant research.

Conclusions

This 2nd Interim Report provides a summary of work in progress and of completed work. More detailed research reports will be produced over the next six months for each project. In addition, a number of outputs will be produced with specific audiences and purposes, for parents and young people with SLCN, policy makers, practitioners, and commissioners.

1. INTRODUCTION

The 1st Interim Report was published in December 2010 and reported on the first phase of the research programme. Five projects were described and their initial findings reported. This 2nd Interim Report includes reports of the second phase of all five projects plus new projects begun during 2010-11. In each case we present summary reports of the work to date. In addition we have agreed with the Department for Education (DfE) to publish two substantial reports of completed work, which is summarised here (see Sections 3 and 6).

Each section reports on a specific project. At the end of the BCRP (March 2012) we will publish a final report which will comprise a thematic overview of results drawn from findings across projects. The amount and detail of each section varies to reflect the stage of development of the project and what was reported in the 1st Interim Report. Consequently, Sections 3, 5 and 6 are more substantial.

Section 2 provides an interim report of the development of a checklist to identify communication supportive classrooms. Based on a sound basis of research evidence, the checklist has been piloted and will be further examined in the autumn 2011.

Anna Vignoles and her team have produced a second report based on the analysis of the national education datasets (Pupil Level School Census and National Pupil Database). This builds upon that reported earlier to investigate the transition made by pupils identified as having SLCN or autism spectrum disorder (ASD) as they progress through the education system. Their work explores the movement of pupils into and out of each classification, or into another category of special educational needs (SEN) (e.g. moderate or specific learning difficulties), or no longer to be considered to have SEN. A summary is provided in Section 3.

These movements are substantial and occur mainly at the transition from primary to secondary school (key stage 2 to key stage 3). For example, of those who initially start secondary school with non-statemented SLCN approximately one quarter move into the non-SEN category, just under one fifth remain in the non-statemented SLCN category and a further fifth move into another type of non-statemented SEN by key stage 3. There is less movement, however, for those pupils identified as having ASD.

This study has also explored the relationship between school resourcing with movements for pupils with SLCN or ASD and also the relationship with English as an Additional Language

(EAL): pupils who were identified as having SLCN on entry to secondary school, and *also* had EAL, were much more likely to no longer have SLCN by 14 years than those who did not have EAL. They tended to transfer out of SEN, into the non-SEN category, or to a lower level of need.

In Section 4 we present the findings of a study of speech and language therapists' practice. This report builds on the interview study (1st Interim Report) to provide evidence from a national survey of SLTs, focusing particularly on their interventions.

Section 5 presents more information from our prospective study of pupils with either primary language difficulties (specific language impairment (SLI)) or autism spectrum disorder (ASD). We are following children initially aged 6, 8, 10 and 12 over three years. In this report, we present evidence of their language, literacy, social communication and socio-emotional development. We also report on the support they are currently receiving in schools. Central to this study is the examination of the distinctiveness or similarity of the characteristics and needs of these groups of children and of the ways in which teachers then try to meet those needs.

The study by Maggie Snowling and Charles Hulme and their team examined language and literacy attainment during the Early Years Foundation Stage (EYFS) and key stage 1 (Section 6). Their focus concerns whether teacher assessment provides a valid assessment of children's current and future educational attainments. This study was commissioned not only because of its intrinsic interest and importance but also because of the review of the Early Years Foundation Stage (EYFS) led by Dame Clare Tickell and the recent interest in early intervention exemplified by a number of reports addressing early intervention, e.g. two from the review by Graham Allen^{2,3}.

This report by Maggie Snowling and her colleagues is both important as a research study and for what it contributes to the Government's consideration of proposals for implementing the recommendations of Tickell Review. The team show clearly that the EYFS Profile was unnecessarily long and that a shorter version would be more appropriate. They also provide strong evidence for the usefulness of a measure, focusing on language and literacy, and show that language and literacy should be separate elements. We support the Tickell

² Allen, G., (2011a), *Early Intervention: The Next Steps; an independent report to Her Majesty's Government*, HM Government, London

³ Allen, G., (2011b), *Early Intervention: Smart Investment, Massive Savings. The Second Independent Report to Her Majesty's Government*, HM Government, London

Review in arguing for a system of monitoring the progress of children through the Early Years as a means of identifying those at risk of low educational attainment.

Early identification is important in order to ensure early intervention for children with developmental language difficulties. Many areas in the UK have programmes of screening combined with surveillance and monitoring over time, linked to intervention. This study reinforces the importance of both rigorously validated measures and a holistic system rather than a 'one off' screen. This is *not* about completing checklists for managerial and accountability purposes. It *is* about supporting practitioners with well researched methods and systems to optimise the support for young children.

Section 7 addresses the nature of behavioural, emotional and social difficulties (BESD) experienced by children with SLCN. We know from earlier research that there is a great prevalence of BESD among children with language difficulties but also that it is important to examine the nature of these difficulties and how they change over time⁴. For example, peer problems are a particular area for concern; hyperactivity is a concern with children at 8 years but this reduces considerably as they become more mature. In this section we present the findings from analyses of two different groups of children with SLCN, a mainstream secondary school sample and a clinical sample to explore the issues. The main findings are that both samples had significantly higher levels of behavioural difficulties than typically developing children but these were not related to structural language, (vocabulary, syntax, morphology etc.) but rather to social communication and educational attainment.

In Section 8 we report the final phase of our study of parents' preferred outcomes for their children. Importantly, we show that parents do not only stress academic outcomes: independence, for example, is also valued.

Section 9 summarises our work on cost-effectiveness. The first stage was reported in greater detail in our 1st Interim Report. We are now producing papers for publication in journals to report the current work. However, we will also produce a further account in the end of BCRP report next year.

Finally we report on the initial, setting up phase of a study of children who stammer (Section 10). Unfortunately, this was substantially delayed as a result of meeting the requirements of

⁴ Lindsay, G., Dockrell, J. & Strand, S. (2007). Longitudinal patterns of behaviour problems in children with specific speech and language difficulties: Child and contextual factors. *British Journal of Educational Psychology*, 77, 811-828.

the many different primary care trusts involved. This is a serious issue for this kind of practice-based research. As a result, we are most grateful to the DfE for allowing this study to continue to July 2012, beyond the March official end of the BCRP, so that it may be completed properly.

We now enter the final months of the BCRP. As you will see from this report, we have a number of studies continuing and due to end by March 2012, apart from the stammering project which continues until July. We are also developing dissemination in conjunction with The Communication Trust, the Royal College of Speech and Language Therapists, I CAN, and Afasic. We will be presenting to the three regional Hello! conferences this autumn, as part of the Year of Communication. We also hope to organise a conference to follow the publication of the Final Report, around June 2012, based on the BCRP but also including international experts.

2. COMMUNICATION SUPPORTING CLASSROOMS PROJECT

Julie Dockrell, James Law, Ioanna Bakapoulou, and Sarah Spencer

2.1 Aims of the Study

The growing number of children identified with Speech, Language and Communication Needs (SLCN) has increased the demand on services, calling for a re-examination of the ways in which speech, language and communication are supported for children across health and education services. Although many children with difficulties continue to receive individual assessment and intervention from speech and language therapists and language specialist in schools, there is a move towards increasing the “communication friendliness” of the classroom environment to provide quality first language learning environments. By ensuring that classroom environments offer *‘quality first’* language learning opportunities, the numbers of children identified with SLCN should be reduced and those referred to specialist services should then be reduced to those who experience needs which do not respond to good quality teaching. Such classroom environments should enhance the speaking and listening skills of all children. These changes have involved the introduction of modifications to classrooms and pedagogical techniques which are perceived to be of benefit to all children irrespective of whether they have difficulties or not. The use of the term ‘friendly’ signals that staff in classrooms have put a range of specific processes in place which are designed to support the development of communication skills.

The aim of this BCRP study is to capture evidence informed criteria which can be used to identify communication supporting classrooms. The project has four objectives:

1. To review the evidence base underpinning elements thought to support communication,
2. To identify key variables from the review and develop these into a Communication Supporting Classrooms (CSC) framework, an observational checklist designed to monitor classroom environments and learning spaces,
3. To test the extent it is possible to distinguish schools which purport to be communication friendly and those which make no such claims,
4. To consider the possibility of developing such a framework into a training schedule.

2.2 What we have done

The project is designed in four phases. The **first** phase (February 2011) included a review of all relevant published outputs related to supporting oral language so as to identify what is already known about the concept of the communication supporting classroom. A two-stage review model was used in order to identify appropriate literature. The first stage consisted of identifying studies that met the review inclusion criteria (1. Study written in English; 2. Study related to Foundation Stage and KS1 classroom practices; 3. Study is empirical and evidence-based or a review of empirical studies). This narrowed the focus of the studies and ensured that only relevant papers were reviewed. The second stage consisted of in-depth review of selected studies in order to identify key elements and processes involved in classroom environments which enhance language development. In addition to the literature review, we also identified elements of supportive oral language practice highlighted in Ofsted reports.

The **second** phase (March-May 2011) involved the development of an observational checklist based on the evidence identified from the literature review (see section below on Observation Checklist Development) and its piloting in a number of settings to ensure that it would capture in a reliable way those resources, opportunities and practices which contribute to the development of a language-rich environment for children. Pilot observation sessions also included interviews with SENCOs about the checklist and school practices.

The **third** phase (June-July 2011) involved an empirical study collecting data from a range of schools using the criteria identified in phases 1 and 2. Schools were visited during Summer Term of the 2010-2011 academic year. The schools were identified through the Ofsted reports, the Greenwich Speech and Language Therapy Service and through the charity ICAN.

The **fourth** phase will repeat the observations in the autumn term of 2011-2012 academic year to ascertain whether the initial observations were reliable and are capturing all aspects of the classroom environment and the teaching and learning which occurs in these classrooms. It is also anticipated that we will complete an evaluation, with pre and post measures, of the Chance to Talk programme being used to train teachers to improve the 'communication friendliness' of their classroom in a number of school. We also plan to provide training to school staff in using the Observation Checklist and examine the reliability of school staff in completing it. Finally, more settings will be included in the main empirical

study; these are school settings which have either expressed interest in being involved in the study or settings that have been identified through the charity ICAN.

Table 1 presents details of the schools involved in the project to date and agreements from other schools for the next phase.

Table 2.1 - Communication Supporting Classrooms Project School Details

Area	No of Schools	No of Classroom Observations
Phase 2 – Pilot		
London	9	1 Nursery Classroom Observation 9 Reception Classroom Observations 6 Year One Classroom Observations
Newcastle	6	4 Reception Classroom Observations 2 Year One Classroom Observations
<i>Total Phase 2</i>	15	<i>22 Classroom Observations</i>
<i>From these inter-rater reliability data were gathered in:</i>	9	<i>8 Reception Classroom Observations 5 Year One Classroom Observations Total: 13 Classroom Observations</i>
Phase 3 – Empirical Study 2010-2011		
London	4	3 Reception Classroom Observations 3 Year One Classroom Observations 1 Year Two Classroom Observation
Newcastle	5	7 Reception Classroom Observations 5 Year One Classroom Observations 1 Year Two Classroom Observation
<i>Total Phase 3</i>	9	<i>20 Classroom Observations</i>
Phase 4 – Empirical Study 2011-2012		
London	4	3 Reception Follow-up Classroom Observations 3 Year One Follow-up Classroom Observations 1 Year Two Follow-up Classroom Observation
Newcastle	5	7 Reception Follow-up Classroom Observations 5 Year One Follow-up Classroom Observations 1 Year Two Follow-up Classroom Observation
Additional Local Authorities	TBA	TBA
<i>Total Phase 4</i>		

2.2.1 Phase Two - Observation Checklist Development

The *Communication Supporting Classrooms Observation Checklist* has been designed with the aim to identify key elements, resources and practices that support communication within classroom environments and learning spaces. Therefore, the CSC Observation Checklist

aims to provide schools with a profile of their strengths and, as appropriate, areas for improvement. The CSC Observation Checklist is applicable in Reception, Year 1 and Year 2 but could also be used in early years settings. As an observation checklist, it is designed to be used in an observation of a classroom or a learning space during a regular classroom session. The average length of time necessary to collect a representative sample of behaviour is one hour with an additional 20 minutes prior to the observation period to become familiar with the classroom setting and available resources.

The CSC Observation Checklist is divided into three dimensions:

- *Language Learning Environment*: This dimension involves items related to the physical environment and learning context
- *Language Learning Opportunities*: This dimension involves items related to the structured opportunities that are present in the setting to support children's language development
- *Language Learning Interactions*: This dimension involves items related to the ways in which adults in the setting talk with children

The CSC Observation Checklist includes elements which refer both to effective pedagogy, teaching and learning as well as language specific aspects. Both good classroom environments and effective pedagogy are seen as prerequisites for providing the appropriate context to support oral language. There is a brief guidance document with the CSC Observation Checklist which provides exemplars of the relevant categories.

The CSC Observation Checklist does not assess individual children and as such can provide an indication only that the language information collected meets what would be seen as good quality first practice and, as such, should capture a Tier 1 measure of a *response to intervention* model for language and communication.

An expert advisory group was sent the CSC Observation Checklist, prior to piloting and provided feedback on the content and presentation of the tool. The advisory group included speech and language therapists, education staff and researchers. Their comments were taken into account to further refine the checklist before piloting.

2.2.2 Phase Two - Pilot

From March to May 2011, the CSC Observation Checklist was piloted in a number of settings. Initially, we tested the CSC Observation Checklist in a range of different schools in order to refine it as a measurement tool, consider issues related to its use and develop a

guidance that would facilitate education staff into using it appropriately. In the second phase of piloting, we examined issues of reliability of the checklist. Fifteen schools were visited in the second phase of the study, and data were gathered in nine of them to establish inter-rater reliability for each dimension of the CSC Observation Checklist both as per item as well as for the overall 'score'.

Selection of Settings

The schools involved in the second phase of the pilot were selected based on the following criteria:

- a) Exclusionary criteria – we excluded any schools with associated language unit resources, specialised centres (e.g. ICAN), Dyslexia friendly schools or schools under special measures (Ofsted),
- b) Schools were chosen to reflect national averages for statements of SEN and educational attainments.

2.2.3 Phases Three and Four – Empirical Study

The third and fourth phases involve an empirical study collecting data from a range of schools using the criteria identified in phases 1 and 2.

- Nine schools were visited during Summer Term of the 2010-2011 academic year and twenty classroom observations were conducted. The schools have been identified as 'good practice' schools through the Ofsted reports, the Greenwich Speech and Language Therapy Service and through the charity ICAN.
- Repeated observations in the same twenty classrooms will be conducted in the autumn term of 2011-2012 academic year to examine changes within classroom environments and in order to ascertain whether the CSC Observation Checklist could capture all aspects of the classroom environment and the teaching and learning which occurs in these classrooms.
- In the Autumn Term of 2011-2012 academic year, training will be provided to school staff in using the Observation Checklist to examine the reliability of school staff in completing it.
- Finally, more settings will be included in the main empirical study; these are school settings which have either expressed interest in being involved in the study or settings that have been identified through the charity ICAN. Classroom observations for these settings will take place at the beginning of the Autumn Term 2011 and follow-up observations will take place at the end of the term before Christmas.

Observation Checklist Reliability and Differentiation of Schools

The classroom observations listed above were planned as a way of ensuring that the CSC Observation Checklist is a reliable measurement of the communication environment but also in order to test the extent it is possible to distinguish schools which purport to be communication friendly and those which make no such claims. To that extent, observation checklist reliability and differentiation of school practices will be established in the following ways:

- **Inter-rater reliability:** As part of the pilot, inter-rater reliability was established for each dimension of the CSC Observation Checklist both as per item as well as for the overall 'score'.
- **Over time:** As part of the empirical study, classroom observations will be repeated from Summer Term 2011 to Autumn Term 2011 and for the new settings involved in the study in September 2011, classroom observations will be repeated before and after half-term (Autumn Term 2011) in order to examine features of the environment that change.
- **School v. Class:** As part of the empirical study, observations took place in different classes from the same school to address consistency in settings.
- **Between Professionals:** As part of the empirical study, following training of school staff, classroom observations will be repeated by school SENCOs to examine reliability between professionals.

2.3 What we have found

In Phase Two, 13 classroom observations were conducted with the aim of piloting the CSC Observation Checklist. These revealed that inter-rater reliability for the CSC Observation Checklist was consistently high, with greater than 83% agreement between raters for the dimension of the Language Learning Environment being achieved for 12 of the 13 observations. This was also the case for the presence of Language Learning Opportunities where agreement between raters was higher than 71% for 11 of the 13 observations and Language Learning Interactions where agreement between raters was higher than 84% for 12 of the 13 observations. Reliability for the frequency of Language Learning Interactions was lower but achieved acceptable levels for the majority of the observations. We are currently considering ways of increasing the reliability of the checklist's dimension of Language Learning Interactions as these are seen as key to supporting the development of

language and communication. In Phase Three, twenty initial classroom observations were conducted and these will be repeated in the Autumn Term 2011 to address stability in the schools.

2.4 What we are doing next

1. *Ranking the evidence.* The CSC Observation Checklist is evidence informed. In August 2011, the Senior Research Fellows working on the project will undertake an additional task of scaling the evidence underpinning the CSC Observation Checklist as per typical evidence based studies, and will subsequently highlight the items with a strong evidence base as key features.
2. *Phase 4 Follow-Up Observations.* From September 2011 to December 2011, we will return to each of the nine schools to repeat the observations in order to address stability in the schools and the reliability of the CSC Observation Checklist.
3. *Phase 4 New Schools.* A number of new schools will be visited before half-term in the Autumn Term 2011 to conduct classroom observations.
4. *Phase 4 Follow-Up Observations of New Schools.* We will return to the new schools after half-term in the Autumn Term 2011 to repeat the observations conducted at the beginning of the term.
5. *Phase 4 Staff Training.* We will provide training to school staff in appropriate use of the CSC Observation Checklist.
6. *Phase 4 School Staff Conducting Observations.* Following training, school staff will be asked to conduct observations in the same classrooms that the research team has visited to ensure reliability of the tool used between professionals.

3. A FURTHER INVESTIGATION OF PUPILS WITH SPEECH, LANGUAGE AND COMMUNICATION NEEDS (SLCN) AND AUTISM SPECTRUM DISORDER (ASD)

Elena Meschi, John Micklewright and Anna Vignoles

3.1 Aims of the Study

We have carried out two studies of pupils with speech, language and communication needs. This second study also includes pupils with Autism Spectrum Disorder (ASD). This section summarises the second study, but also includes some material from the first study⁵. A full report of this second study will be published in parallel with the Final Report in 2012.

In this report we consider the transitions made by children who have been identified by the school system as having Speech, Language and Communication Needs (SLCN) or Autism Spectrum Disorder (ASD) as they progress through the education system. Specifically, we explore the following questions:

- How does the proportion of children identified as having SLCN vary over time and by age?
- How does the proportion of children identified as having ASD vary over time and by age?
- What are the characteristics of individuals who make transitions into and out of both the SLCN and the ASD category of need during secondary school?
- How does having English as Additional Language relate to the likelihood of a child having been identified as ever being SLCN, as well as the likelihood of them moving out of the SLCN category?
- Do different types of schools have very different proportions of children identified as having SLCN and ASD and do these pupils make different transitions in different school contexts?

Key Findings

- Although clinical studies have generally not suggested that having SLCN is strongly related to socio-economic background, we find that in the English school system, it is

⁵ Lindsay, G., Dockrell, J.E., Law, J., Roulstone, S., & Vignoles, A. (2010) *Better communication research programme 1st interim report*. London: DfE. <http://publications.education.gov.uk/eOrderingDownload/DFE-RR070.pdf>. The whole report is available on the BCRP website [add URL]

certainly the case that young people who are socially disadvantaged are much more likely to be identified as having SLCN.

- We also found evidence of some conflation of Speech, Language and Communication Needs and the needs associated with having English as an additional language (EAL).
- Interestingly when pupils who initially had SLCN changed their category of primary need in secondary school, they were most likely to be identified as having moderate or specific learning difficulties NOT behavioural, emotional or social difficulties.

3.2 What we have done

In this report we analyse the characteristics and SEN status of multiple cohorts of children. We describe the characteristics of pupils who transition into and out of the SLCN and ASD categories of SEN over time and by age. This will be of interest in itself and will also improve our understanding of the relative achievement of these groups.

Methodological Approach

Our previous research shows that the dynamic nature of the special educational needs of pupils with SLCN and ASD is an important issue.

- At the age of 7 years, 3% of children have been identified as having Speech, Language and Communication Needs (SLCN), whilst 0.8% have been identified as having Autism Spectrum Disorder (ASD).
- Yet the proportion of pupils who have been identified as having these particular special educational needs changes markedly with age.
- The proportion identified with SLCN falls to around 0.6% of 16 year olds and the proportion with ASD increases to around 1% at the beginning of secondary school and falls to 0.7% by age 16.

This report specifically investigates these transitions made by pupils into and out of different categories of SEN (or indeed into and out of the no SEN category). We focus on a sample of pupils who have at some point in time been identified as having either SCLN *or* ASD.

We use system wide English administrative data (the Pupil Level School Census: PLASC) which tells us whether a student has been identified as having SLCN or ASD, (or any other

category of special educational needs) as well as providing us with other important information on student and school characteristics.

We undertake multivariate analysis to determine the pupil level and school level factors that are statistically associated with making a positive transition from the SLCN category into another SEN category, such as a different primary special need, no special needs at all or a lower level of special need.

Caveats

Our data is administrative and collected for non research purposes⁶. This leads to some limitations in the analysis. Most crucially, we lack clinical information on the needs of children. We can therefore only determine whether the child has been identified as having particular special educational needs by the school system and we acknowledge that it is highly likely that some children with SLCN or ASD needs may not have had them identified in our data.

3.3 What we have found

3.3.1 The prevalence and characteristics of those with SLCN/ASD

In our 1st Interim Report we reported that the prevalence of reported SLCN reduced with age and that this occurred mainly during key stage 2 with a lower rate of decrease during key stages 3 and 4. Furthermore, this reduction was essentially a function of fewer pupils at school action plus: the prevalence of pupils with statements where SLCN was the primary need was relatively stable across the age range (Figure 3.1).

In this report we extend our analysis further to include pupils with ASD (Figure 3.2) and to examine the relationship between identification as having SLCN or ASD and several other factors including having English as an additional language (EAL).

Prevalence rates over ages 7 – 16 years

First we examine the patterns of prevalence by age. Figures 3.1 and 3.2 present these data for pupils with SLCN and ASD respectively for ages 7-16 years. These distinguish

⁶ State schools in England are required to complete the School Census each term. This includes specifying whether a pupil has i) special educational needs with a statement or at School Action Plus, in which case the category of SEN for the primary need must be specified (e.g. SLCN or ASD); ii) special educational needs at School Action, which are unclassified, or iii) does not have SEN.

prevalence of pupils with a statement of special educational needs from those at the lower level of School Action Plus, where support is provided from outside professional(s) but the pupil has not been made the subject of a statement. For SLCN, as reported in the 1st Interim Report, prevalence is just under 3 per cent of pupils at 7 years dropping to about 0.5 per cent at 16 years whereas for ASD overall prevalence is much lower and remains relatively stable at about 0.65 per cent.

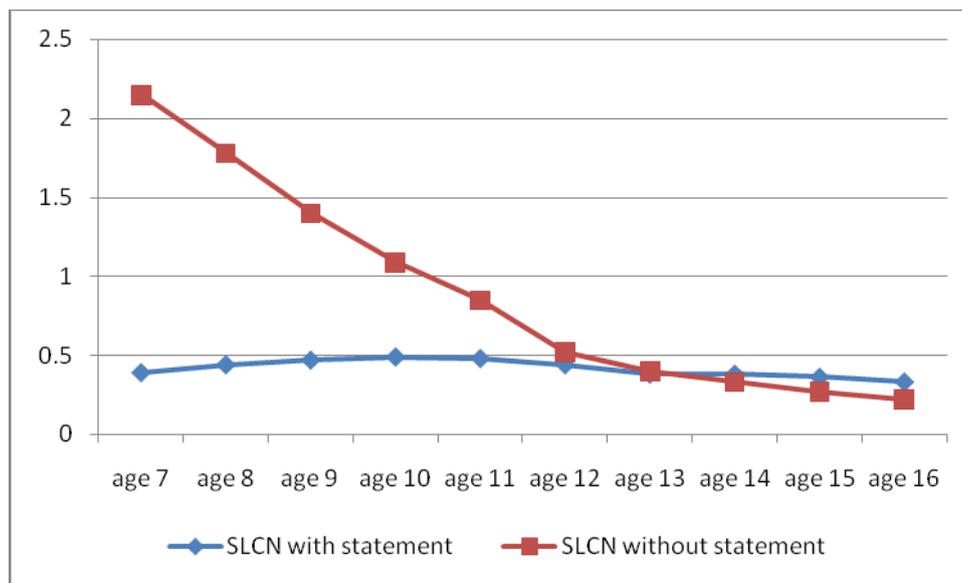


Figure 3.1: Prevalence of SLCN across ages, by SEN status

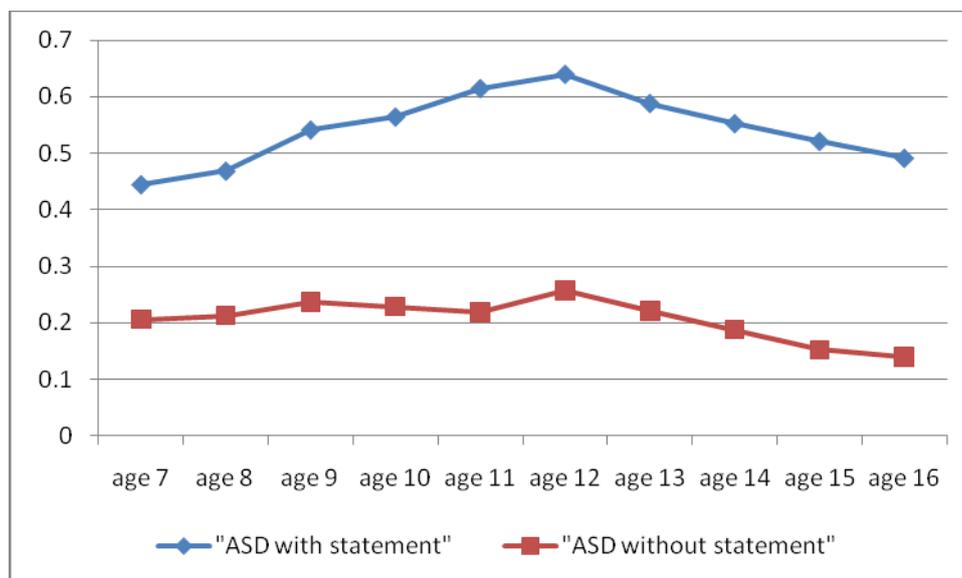


Figure 3.2: Prevalence of ASD across ages, by SEN status

The prevalence rates also show very different characteristics. The rates for pupils with SLCN at School Action Plus are much higher than those with statements at 7 years. However,

whereas the rate for pupils with statements remains stable, that for pupils with SLCN at School Action Plus drops considerably between 7 and 12 years, before flattening. The prevalence for pupils with ASD is very different in that, first there are consistently more pupils with statements than at School Action Plus and second the School Action Plus trajectory increases between 7 and 12 years before reducing; the prevalence for pupils with statements is similar to that for the SLCN group, approximately flat with a small increase to 11-12 years and then a slight downward trend to 16 years.

Prevalence and social disadvantage and EAL

The likelihood of being identified as having SLCN or ASD differs amongst different types of children.

- Young people who are socio-economically disadvantaged or who have English as an additional language (EAL) are most at risk of being identified as having SLCN (at age 11, key stage 2). This is particularly true for non-statemented SLCN. The risk of having SLCN is not high however, even for these groups, since only 3% of the school population are ever identified as having SLCN (at School Action Plus or with a statement).
- Other research has indicated that some conditions that result in SLCN are not socially graded, such as stammering. Yet in the school system, it is the case that the likelihood of being identified as having SLCN is socially graded. This discrepancy may therefore either reflect parents' differing willingness to identify their child's needs or a tendency for schools to be more likely to identify SLCN needs in low SES children (or both).
- By contrast, being socio-economically disadvantaged or having English as an Additional Language are not major risk factors for occurring identified as having ASD at key stage 2.
- Low achievement is a risk factor for both SLCN and ASD groups but pupils identified as having SLCN are lower achieving as compared to those with ASD.

3.3.2 Movement into and out of categories of SEN

We found significant movement of pupils during secondary school into and out of the categories of SLCN and ASD, with most movement occurring between primary and secondary school (key stage 2 to 3).

- Of those who initially start secondary school with non-statemented SLCN, approximately one quarter move into the non-SEN category, just under one fifth remain in the non-statemented SLCN category and a further fifth move into another type of non-statemented SEN by key stage 3.
- Hence many pupils move from the SLCN category of need into another type of SEN category of need during secondary school. We found the most common categories for pupils to move into were the categories of Moderate Learning Difficulties (MLD) and Specific Learning Difficulties (SpLD).

We found less movement of pupils identified as having ASD. Those initially identified as having non statemented ASD are more likely to remain in that category by key stage 3 than was the case for pupils with SLCN.

- Of those who start secondary school identified as having ASD, 41% remain in this category of need by the end of key stage 3.
- Those initially identified as having non-statemented ASD and who move to another type of SEN category of need are most likely to move into Behavioural, Emotional and Social Difficulties (BESD) and Moderate Learning Difficulties (MLD).
- For those who initially had a statement for ASD, the most common category to move into is MLD, followed closely by SLCN.

Another striking result was that pupils who were identified as having SLCN on entry into secondary school, and *also* had English as an Additional Language, were much more likely to no longer have SLCN by age 14 than those who did not have EAL. Such pupils were much more likely to make a positive transition during secondary school into either the non-SEN category or to a lower level of need, namely unspecified school action SEN. Hence some EAL pupils are identified as having SLCN in primary school but this apparent need does not persist into secondary school. There are several possible factors at play here. This could imply some confusion about the needs of children who have EAL in primary school, some of whom may have been categorised as having SLCN (i.e. ‘a special educational need’) when their primary need related to the fact that they have English as an Additional Language. As they progress through the English speaking environment of school their use of English improves sufficiently to access the academic curriculum without additional support. Another possibility is that their needs change with age: whereas at KS1 and 2 oral language is seen as a primary need, as the pupil moves through the school system the increasing demands of the curriculum come into play

Perhaps unsurprisingly, we found that pupils who are succeeding at school and have higher achievement are more likely to make a positive transition from SLCN or ASD into either no special needs at all or unspecified school action SEN. Lower achieving pupils are by contrast more likely to exit SLCN and ASD into another different type of SEN.

3.3.3 The School Context

We wanted to determine whether pupils at certain types of school had a higher chance of making a positive transition during secondary school, moving out of the categories of SLCN or ASD for example.

Children who are identified as having SLCN or ASD may however, enrol in particular types of school. Certainly pupils with some special education needs may not have a genuine choice of school and rather than pupils choosing a particular secondary school, it may be that schools de facto select which pupils they admit.

Some but by no means all school characteristics were associated with statistically significant differences in the likelihood of pupils making positive transitions during secondary school. We focused particularly on the following school characteristics: a) total funding per pupil at the school, b) SEN funding per child identified as having SEN at the school and c) pupil achievement on entry into the school. We found that:

- Pupils identified as having SLCN and who attend better funded schools are *not* more likely to make a positive transition out of SLCN, as compared to those attending less well resourced schools.
- Pupils identified as having ASD and who attend better resourced schools **are** slightly more likely to move out of SEN altogether or move to another category of SEN as compared to those who remain in the ASD category.
- Counter intuitively, attending a school with a higher level of expenditure on SEN is not associated with positive transitions. In fact pupils attending schools with higher per capita expenditure on SEN are actually less likely to exit the SLCN/ASD categories. This may mean that pupils who have major and persistent SLCN/ASD are more likely to choose schools with higher levels of SEN funding and such pupils are less likely to make a positive transition out of these categories. Such a result could also suggest that schools with more funding for SEN are more likely to identify children as having special educational needs: if

resources are available, use will be made of them. A third factor is that some schools receive additional funding to support specialist resources ('units') for pupils with specified categories of pupils including SLCN and ASD.

- Pupils attending higher achieving schools, with above average key stage 2 test scores, are somewhat less likely to make a positive transition out of the SLCN category. This may again mean that pupils with persistent SLCN who are less likely to make a positive transition are also more likely to choose schools that have higher achievement levels or, more likely, that such schools are more likely to identify pupils as having SLCN.
- Pupils attending higher achieving schools are however, more likely to make a positive transition from ASD to non-SEN. Attending a higher achieving school is associated with being more likely to make a positive transition for ASD pupils but not for pupils identified as having SLCN.
- Lastly, pupils in socio-economically deprived schools, with a larger proportion of pupils eligible for free school meals (FSM) for example, are no more or less likely to make positive transitions out of SLCN/ASD than those in socio-economically advantaged schools.

3.4 Policy implications

We shall be drawing together the policy implications from the BCRP in our final report; the following are specific to the present project at this stage.

Pupils' special educational needs, particularly in the case of SLCN, are quite dynamic and in particular change during the course of secondary school. It is important that funding decisions and indeed monitoring of pupils takes this fluidity of need into account.

Further research is needed into whether there is systematic misidentification of children's needs in primary school, specifically if those with English as an Additional Language often have their needs mistakenly identified as SLCN. It could also be that their needs are underestimated in secondary education.

In general terms, these administrative data can be effectively used to monitor common transitions made by pupils who are initially identified as having SLCN or ASD. This will help

determine whether some common trajectories exist and hence enable better support for such pupils to be devised.

We did not find a strong and systematic relationship between school quality (whether measured by school funding levels, SEN funding or pupil achievement) and the likelihood of individuals making positive transitions out of SLCN or ASD. This may be unsurprising given the myriad factors that might influence the schools attended and transitions made by such pupils.

4. INTERVENTIONS FOR CHILDREN WITH SPEECH, LANGUAGE AND COMMUNICATION NEEDS (SLCN) IN ENGLAND: A SURVEY OF SPEECH AND LANGUAGE THERAPISTS

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4.1 Aims of the Study

This survey is part of a large project within the BCRP to examine 'best practice'. This comprises two parallel themes:

- A review of the research literature. The purpose of this stream was to identify the evidence available for interventions for children and young people with primary speech and language difficulties.
- A review of professional practice to explore intervention methods adopted by practitioners and the evidence base for these approaches.

4.2 What we have done

In the 1st Interim Report⁷ we reported on the initial stages of both streams. With respect to the second stream, we reported the interviews undertaken with managers from speech and language therapy services and educational psychology services in 14 areas of England. In this report we build upon the information produced and insights gained in Phase 1. We present the results of a national survey of speech and language therapists (SLTs).

Design

We used a sequential two phase combined methods design. Phase 1 comprised interviews, Phase 2 comprised an online survey. This report focuses mainly on the SLT survey: see the 1st Interim Report for the results from the interviews.

Methods

i) **Interviews:** Semi-structured interviews were conducted with 13 SLT and 10 school psychological service managers from a 10% sample of local authorities/ health trusts, after

⁷ Lindsay, G., Dockrell, J.E., Law, J., Roulstone, S., & Vignoles, A. (2010) *Better communication research programme 1st interim report*. London: DfE. <http://publications.education.gov.uk/eOrderingDownload/DFE-RR070.pdf>

informed consent; average 90 minutes duration. We used main questions supported by probes for further exploration, optimising both detailed, locally relevant responses and consistent coverage of topics. The process was iterative; each interview was informed by those beforehand.

ii) **Survey:** Analysis of the interviews identified key themes which were used to construct the online questionnaire for SLTs working with children. The survey aimed to provide a profile of practice and identify the range of interventions used. Distribution was facilitated by the Royal College of Speech and Language Therapists.

iii) **Participants:** A total of 576 SLTs responded to the survey, 27 of whom were filtered out as they did not work with children and young people, nor did their role involve training others to work with children. A further 13 were excluded from the core questions; instead they were routed to a section specifically designed for those involved only in training others to work with children and young people with SLCN. Given the small number of respondents in this category, their data will be analysed separately and presented in the final report.

iv) **Procedure:** The main method used in the survey was to ask SLTs to think of the *three most commonly used interventions* and then to drill down, one at a time, to examine these in detail. We explored use of *published programmes, intervention activities, and principles/approaches*. We are able to cross reference findings by age and primary need of the children for whom these are used. Other data include delivery (frequency and timescale), the outcome data gathered and whether these were reported within their service, allowing overall monitoring of outcomes and effectiveness. Hence the data relate to each SLT's *most frequent practice*.

v) Analysis

Thematic analysis of interviews was shaped initially by pre-determined categories, developed as emergent themes were identified. Data from the questionnaires were analysed descriptively using SPSS v18.

4.3 What we have found

4.3.1 Most common patterns of work:

Age: the most common age reported was 5-7 year old children (28% SLTs). Also, a total of 75% of SLTs reported their most common age ranges were within the broader 2-7 years range (Table 4.1).

Table 4.1 Age of child with whom the SLT most frequently worked (% SLTs)

Age group	<i>n</i>	%
Under 2 yrs	17	3.2
2-3 yrs	114	21.3
4-5 yrs	133	24.8
5-7 yrs (Key stage 1)	152	28.4
7-11 yrs (Key stage 2)	75	14.0
11-14 yrs (Key stage 3)	38	7.1
15+ yrs (Key stage 5)	7	1.3

N = 536

Primary need: Primary SLCN with language as the primary difficulty was the most common area reported (36%). Primary SLCN with speech as the primary area was reported by 19% and Autism Spectrum Disorder (ASD) by 11.4% (Table 4.2)

Table 4.2 Primary need with which the SLT most frequently worked (% SLTs)

SEN category	n	%
Primary Speech Language and Communication needs with language as the primary difficulty	193	36.0
Primary Speech Language and Communication needs with speech as the primary difficulty	104	19.4
Autism Spectrum Disorder	61	11.4
Severe Learning Difficulties	39	7.3
Specific Learning Difficulties (e.g. dyslexia, dyspraxia)	31	5.8
Primary Speech Language and Communication needs with communication /interaction as the primary difficulty	30	5.6
Moderate Learning Difficulties	27	5.0
Profound and Multiple Learning Difficulties	17	3.2
Hearing Impairment	13	2.4
Physical Difficulties	9	1.7
Behavioural, Emotional and Social Difficulties	8	1.5
Multi-Sensory Impairment	4	0.7

N = 536

Main setting: Mainstream schools were reported most frequently (35%) followed by community clinics (17%) and special schools (12%) (Table 4.3).

Table 4.3 The setting in which the SLT most frequently worked

Setting	n	%
Children's centre	32	6.0
Pre-school/nursery	35	6.5
Community clinic	91	17.0
Mainstream school	190	35.4
Child development centre	23	4.3
Resource base	38	7.1
Special school	66	12.3
Home and Leisure clubs	29	5.4
Specialist assessment centre	12	2.2
Independent practice	7	1.3
Language resource base, specialist language unit	3	.6
Mainstream	2	.4
Setting other than listed	8	1.5

N = 536

When respondents chose 'Setting other than those listed', they were asked to specify the setting. This generated 54 comments, almost half of them (22) mentioned working from home (either the child's or practitioner's). Where possible the comments were re-coded into the categories listed, leaving only 8 unclassified.

Prevalence of interventions

We explored the use of *published programmes*, *intervention activities* and *principles or approaches to intervention* that SLTs use most often. We report here the percentages for 'sometimes' + 'frequently'. The order of this combined prevalence closely matched that for 'frequently' alone.

Programmes: A total of 38 programmes were specified. These include a mixture of those which comprise a published kit including a manual and others based on published papers in journals. The most frequently reported programmes used were:

- *Derbyshire Language Scheme* (65% SLTs)
- *Makaton* (58%),

- *Nuffield* –dyspraxia (47%)
- *Core Vocabulary* (40%) and
- *Hanen* (39%)

A full list of the programmes is provided in Appendix A1, Table A1.

Service developed programmes: In addition 126 programmes were specified that the SLTs reported as having been developed by the service (or another service). Over a quarter of respondents (28%) reported using these. In addition, a further 163 ‘Other published programmes’ were also mentioned but with no specification by name.

Intervention activities: Eleven different intervention activities were used by the SLTs.(see Appendix A2 for details) The main methods were:

- Phonological awareness tasks (67%)
- Barrier games (66%)
- Auditory discrimination activities (64%)
- Auditory memory activities (62%)
- Narrative therapy (59%).

When asked to specify other intervention activities frequently used, 133 other activities were mentioned.

Principles/approaches: A total of 26 different principles/activities were specified. These included broad approaches such as creating a language rich environment and differentiating the curriculum; general approaches such as use of signing and total communication; and more specific methods such as the use of forced alternatives. Overall, the most commonly used were:

- Modelling (95%)
- Forced alternatives (84%)
- Repetition (84%)
- Visual approaches to support language (83%)
- Reducing distractions (82%)

A full list of principles and approaches is provided in Appendix A3.

4.3.3 Prevalence of interventions by main types of SLCN

Prevalence varied for children with different primary SLCN; the most commonly used programmes for children with primary language difficulties, primary speech difficulties and ASD are presented in Table 4.4.

Table 4.4 . Most commonly used programmes (% SLTs)

	Primary Language n=193	Primary speech n=104	ASD n=61
Derbyshire Language Scheme	75	51	57
Nuffield – dyspraxia		72	
Makaton	58	51	59
Hanen	45		
Core Vocabulary		44	
Language for Thinking	43		
Colourful Semantics	42		
Social Stories			71
Metaphon		41	
Picture Exchange Communication System			72
Intensive Interaction			61

4.3.4 Intervention delivery

Model:

- 22% SLTs reported that they personally deliver the intervention most frequently but ask others to carry out follow up activities
- 42% SLTs deliver it most regularly but others deliver it more frequently between visits
- 29% SLTs deliver it occasionally for the purpose of demonstrating to other(s) how they should deliver the intervention on a more frequent basis
- 6% SLTs reported that others deliver it following SLT advice.

Frequency: The most common frequency of delivery of an intervention by the SLT was weekly (48% SLTs), about four to five times more than SLTs who reported the next most

common frequencies of once every 6 weeks (12%), once a fortnight (10%) and 2-3 times a week (10%) – see Table 4.5. (See Appendix A4 for more details).

Table 4.5 Frequency of delivery of intervention (% SLTs)

<i>Frequency of delivery</i>	<i>n</i>	<i>%</i>
Throughout the day	32	6.4%
Once a day	5	1.0%
Two or three times a week	49	9.8%
Once a week	238	47.5%
Once a fortnight	50	10.0%
Once a month	41	8.2%
Once a term (6 weeks)	58	11.6%
Once a double term (3 months)	23	4.6%
Less than once a double term	5	1.0%

N = 501

Timescale: The timescale over which interventions are delivered varied between SLTs. However, as shown in Figure 4.1, six weeks or more was most likely for the large majority (89%) of the sample: 34% carried out an intervention for 6 weeks; 25% for 3 months and almost a third of SLTs (30%) carried out interventions lasting a year or more.

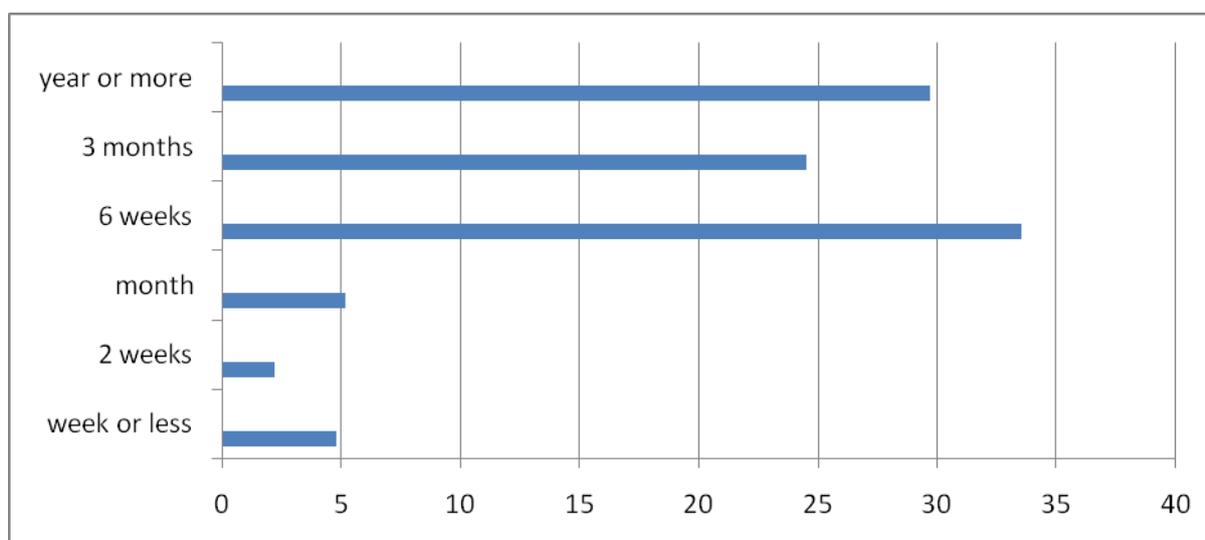


Figure 4.2 Length of time for the delivery of intervention

4.3.5 Support for interventions

Those who indicated that they received support delivering interventions were asked who would usually provide the support. Responses in Table 4.6 show that it is usually provided by a teaching assistant (45%) or a parent (34%).

Table 4.6 Person providing support for the SLT for the intervention (% SLTs)

Supported by:	<i>n</i>	%
Parent	180	34.0
Teacher	59	11.1
Nursery nurse	32	6.0
Teaching assistant	238	44.9
Other	21	4.0

N = 530

The frequency of support varies in Table 4.7, but is most commonly provided throughout the day (41%), or two/ three times a week (34%).

Table 4.7 Frequency of support (% SLTs)

Frequency of support	<i>n</i>	%
Throughout the day	215	40.8
Once a day	78	14.8
Two or three times a week	181	34.3
Once a week	43	8.2
Once a fortnight	2	0.4
Once a month	3	0.6
Once a term (6 weeks)	4	0.8
Once a double term (3 months)	0	0.0
Less than once a double term	1	0.2

N = 527

4.3.6 Outcome data

Measures of broad outcomes: When undertaking their most frequently used intervention, the most common broad outcome measures used (% SLTs) were clinical judgement (89%) or the opinions of other practitioners, e.g. teachers, or the parents (75%)

(respondents were invited to select all that were applicable) – see Table 4.8. Just under half reported using criterion based measures such as checklists or standardised (norm referenced) tests, with 12% reporting the use of curriculum based assessments (e.g. SATs).

Table 4.8 Measures of broad outcomes used by SLTs

<i>Method of measurement</i>	<i>n</i>	<i>%</i>
Clinical judgment	479	89.4
School or nursery staff/parent opinion	404	75.4
Criterion based measures (e.g. checklists)	258	48.1
Standardised (norm referenced) tests	252	47.0
Curriculum based assessments (e.g. SATs)	62	11.6

N = 536

Broad based outcomes: Improved communication skills was the most commonly reported target outcome for SLTs (78%) when using the interventions that they used most frequently, followed by improved language skills (70%), as shown in Table 4.9. (Respondents were invited to select all that were applicable.)

Table 4.9 Frequency of broad based outcomes

<i>Target outcome</i>	<i>n</i>	<i>%</i>
Improved communication skills	417	77.8
Improved language skills	375	70.0
Improved speech sound skills	184	34.3
Improved fluency	58	10.8
Other	298	55.6

N = 536

Specific outcomes: We also asked for details of specific outcomes that the SLTs used. Again, respondents were invited to select all that were applicable. The most frequently reported outcomes for each domain were as follows.

- *Communication:* attention and listening skills (76%), communication skills e.g. use of non-verbal cues, initiating (74%)
- *Language:* expressive language (90%), understanding of language (90%),
- *Speech sound system:* intelligibility (90%), phonological awareness (73%)

- *Social development*: self confidence/esteem (85%), opportunities to communicate (78%), independence (74%).

See Appendix A5 for details of each of these four domains plus other specific outcomes.

Among the other specific outcomes targeted there was a strong focus on the social/behavioural domain. For example, 85 per cent of those responding specified increased confidence/self esteem and 74 per cent noted increased independence (Table 4.10). The latter is interesting in the light of parents' reports that stress the importance they give to independence (see Section 6). Improved behaviour (72%), improved relationships (67%) and greater inclusion (69%) were also frequently mentioned.

Table 4.10 Other specific outcomes targeted

<i>Specific outcomes: other</i>	<i>n</i>	<i>%</i>
Increased confidence/self esteem	254	85.2
Increased opportunities to communicate	231	77.5
Higher enjoyment of communication	224	75.2
Increased independence	219	73.5
Improved behaviour	213	71.5
Increased access to the curriculum	212	71.1
Improved teacher/teaching assistant/early years practitioner skill/awareness	211	70.8
Greater inclusion	205	68.8
Improved relationships	199	66.8
Improved self monitoring/self-awareness	169	56.7
Improved parent skill/awareness	167	56.0
Improved auditory memory/recall	124	41.6
Improved literacy skills	97	32.6
Other	5	1.7%

Table 4.10 also shows the importance given by SLTs to increased access to the curriculum (71%), improved teacher and teaching assistant skills and awareness (71%), and also those of parents (56%). Improving literacy, by contrast, was much less frequently identified (33% of SLTs).

Reporting outcomes: 66% of SLTs responding to this question did **not** submit outcome data to their head of service for service level outcome monitoring. The most frequently cited was the East Kent Outcomes System (EKOS) or EKOS-based systems (64 mentions).

4.4 Discussion of findings

Speech and language therapists working with children engage with a wide range of young people with respect to age and type of SLCN although individual SLTs have more specific focus. The most common work reported was with children 2-11 years, especially 4-7 years, with primary language and/or speech difficulties but there is a wide range of practice; e.g. children with ASD, specific learning difficulties (primarily literacy/dyslexia) and those with moderate learning difficulties.

There are some with evidence, for example the Picture Exchange Communication System (PECS) and Hanen, Early Language Parent Programme, which have strong evidence of efficacy with specified participants, including randomized control trials but as indicated by part 1 of this study (Lindsay et al, 2010) the evidence from others is more limited. For example we consider the evidence for the Derbyshire Language Scheme 'indicative'. On the other hand, there is a much stronger evidence base for specific activities, principles and approaches e.g. modelling techniques for expressive language and behavioural techniques for improving phonological awareness.

This reflects the patch nature of research evidence rather than shortcomings by SLTs. The evidence from the interview phase, along with the proliferation of locally developed programmes, suggests that practitioners are adapting and developing programmes to suit local needs. This may be because, in the absence of strongly evidence based programmes that have proven applicability to local populations, practitioners are responding positively with adaptations based on experience. However, this raises an important issue concerning practice and research. Firstly, it suggests that those programmes that have been evaluated need to make explicit the features that are critical to their success and should therefore be retained in any adaptation. Secondly, when developing new programmes, practitioners should attempt to identify the principles and approaches contained within their locally based interventions that have an extant evidence base. Thirdly, it also suggests that evaluations of interventions should be clear about the contexts. Pawson (2006, p.32)⁸ remarks that where interventions are applied in complex contexts, 'leakage' occurs to the original effectiveness and one cannot therefore assume that it remains an evidence based intervention.

However, the interview evidence suggests also that SLTs adopt consciously an approach that is driven by professional judgement of more specific elements of intervention

⁸ Pawson, R. (2006). *Evidence-based policy: a realistic perspective*. London: Sage Publications

approaches to adopt, rather than which (if any) programme as a whole is appropriate. Our review of the evidence base for these is firmer and consequently provides a stronger foundation for this approach⁹.

SLTs also use clinical judgement and seek informal outcome evaluation (from parents/teachers); less than 50 per cent reported using objective, standardized or criterion referenced measures to assess outcomes and two thirds of those responding did not submit data to the head of service, limiting service level monitoring and planning. This relates to judgements of the suitability of objective measures for assessing progress and outcomes of the children and young people with whom SLTs work. However, this approach also limits the collection of more objective data that could indicate effectiveness.

4.4.1 Implications

There is a professional obligation to practise using evidence-based methods and a political climate in England that is starting to stress outcomes as drivers of service commissioning – ‘payment by results’ is also returning. The results of this large scale survey raise important questions about practice, including:

- Is the lack of evidence for programmes acceptable? Should there be more use of well designed programmes or is this not the way forward? If programmes are favoured then systematic research of their validity, effectiveness and usefulness is a priority.
- Or should the focus be on the evidence of intervention *activities* and *approaches*? In this case, the issue concerns the professional practice of implementing well validated approaches. Studies of training and implementation are priorities here.

4.5 What we are doing next

The interventions identified in the survey are being related to the evidence from our analysis of the research literature and those reported by educationists. Together these will be used to produce a resource for practitioners by the end of the BCRP. We are also preparing a journal paper for publication, providing more information from the survey. We were fortunate to have the support of the National Association of Professionals Working with Language Impaired Children (NAPLIC) to try to survey that community but the response rate was too

⁹ Lindsay, G., Dockrell, J.E., Law, J., Roulstone, S., & Vignoles, A. (2010) *Better communication research programme 1st interim report*. London: DfE. <http://publications.education.gov.uk/eOrderingDownload/DFE-RR070.pdf>
Law et al (in press)

low to report findings. We will explore the possibility of a survey of educationists using a different access route.

5. PROSPECTIVE LONGITUDINAL STUDY – PHASES 2 AND 3

Julie Dockrell, Geoff Lindsay, Olympia Palikara, Jessie Ricketts, and Tony Charman

5.1 Introduction

Children with speech, language and communication needs (SLCN) often encounter academic, emotional and behavioural difficulties that pose a challenge to the professionals working with them (Bercow, 2008). This stream of the Better Communication Research Programme, the prospective study, is concerned with students identified as having either *primary language difficulties* which we refer to as specific language impairment (SLI) or autism spectrum disorder (ASD) who are being educated in mainstream provision in England.

The term Speech Language and Communication Needs (SLCN) is used in two different ways. The Bercow Review used SLCN as an inclusive term to cover *all* children with speech, language and communication needs including those with primary difficulties with speech, language and communication and those whose needs are secondary to another developmental factor such as hearing impairment or cognitive impairment. The term *specific language impairment* (SLI) has typically been applied to the first group (or *specific speech and language difficulties*: SSLD in the UK). These children are defined as having a primary language difficulty which is not associated with any other developmental difficulty including autism, hearing impairment or other neuro-developmental impairment (Bishop 1997; Leonard, 1998)

From a theoretical point of view, there is increasing interest in comparing the profiles of children with SLI and ASD, and the potential overlap between the two groups has been a matter of recent debate¹⁰. In practice, educational provision is increasingly made within mainstream schools, in some cases within specialist provision within schools, including language units and resource bases. However, professionals in England have argued that students with ASD have increasingly occupied ('taken over') specialist provision intended for students with SLI¹¹.

Additionally, professionals differ with respect to adherence to a *diagnostic* compared with a *needs-based* approach to assessment and provision¹². In the educational system

¹⁰ Williams et al., (2008)

¹¹ Dockrell, Lindsay, Letchford, & Mackie, (2006)

¹² Dockrell et al., (2006)

classification of students' additional learning needs aims to identify specific service requirements and addresses individual children's needs within the school context¹³. Diagnostic approaches argue for a firmer relationship between identified 'conditions' and interventions, with the implicit corollary of different interventions (including placements) for these two groups. However, the usefulness of the diagnostic approach is dependent on the validity of the separation of needs between the students.

Recent evidence has indicated a lack of internal consistency within the SLI diagnosis, including identification of different subgroups within SLI and also a lack of evidence of their consistency¹⁴. The functional importance of the 'specific' nature (relative to general cognitive ability) as a distinguishing feature has also been questioned¹⁵. Furthermore, ASD is, by definition, based on a tri-axial framework of developmental characteristics (social interaction, imagination, communication), as a consequence of which students will be characterised by a wide variety of different combinations of strengths and impairments along the three dimensions. These factors raise important conceptual and research issues but they also pose important challenges to the education (and health) systems in terms of appropriate provision.

What we have done

We report on the first two years of the three year prospective study of students identified as having either SLI or ASD, designed to explore the characteristics, needs and provision made to meet those needs. We build upon the 1st Interim Report which described the screening and sample selection phase.

5.2 Methods

Design: The study utilises a cross-sequential design, allowing both longitudinal and cross-sectional comparisons.

Choice of local authorities (LAs): Five LAs were identified on the basis of their match to national profiles of pupils with special educational needs generally, and autism spectrum difficulties and speech language and communication needs in particular. In addition the authorities performed at national averages for English and Math for their student populations as a whole.

¹³ Florian et al., 2006; McLaughlin et al., (2006).

¹⁴ Conti-Ramsden & Botting, (1999)

¹⁵ Tomblin & Zhang, (2006)

Choice of schools: Schools were identified on the basis of being mainstream settings and agreeing to participate in the longitudinal study. Two hundred -ten schools were initially identified in the five LAs that have been participating in the study. The final number of schools agreeing to participate in the study was 74.

Participants

Screening

Children were identified who were aged 6, 8, 10, and 12 years, attending mainstream provision and had been identified as having either SLCN or ASD as their primary need, according to their school¹⁶. All spoke English as a first language and had no history of hearing impairment or uncorrected eyesight. The design was to identify 25 pupils at each age with SLI and 25 with ASD (expected $N = 200$). Because we know from other research in the BCRP that pupils identified as having SLCN by schools include children who do not meet the SLI criteria, we screened potential participants. The inclusion criteria for the study were:

- SLI and ASD groups: Nonverbal ability in average range or above, as measured by the Matrices subtest from the British Ability Scales II (Elliott et al., 1997)
- SLI group only: expressive language – (Recalling Sentences from the Clinical Evaluation of Language Fundamentals : CELF-4; Semel & Wiig, 2006) below average range ($< -1SD$) **or** receptive language (Recalling Sentences from the CELF 4)- below average range ($< -1SD$).

A detailed description of the sampling process is provided in the flow chart below (Figure 1).

¹⁶ The Pupil Level School Census (PLASC) requires schools to identify and notify the Department for Education (DfE) of pupils with special educational needs. The category Speech, Language and Communication Needs as a primary need is comparable to specific language impairment (SLI) and there is a separate category of autism spectrum disorder (ASD).

FLOW DIAGRAM OF PARTICIPANTS

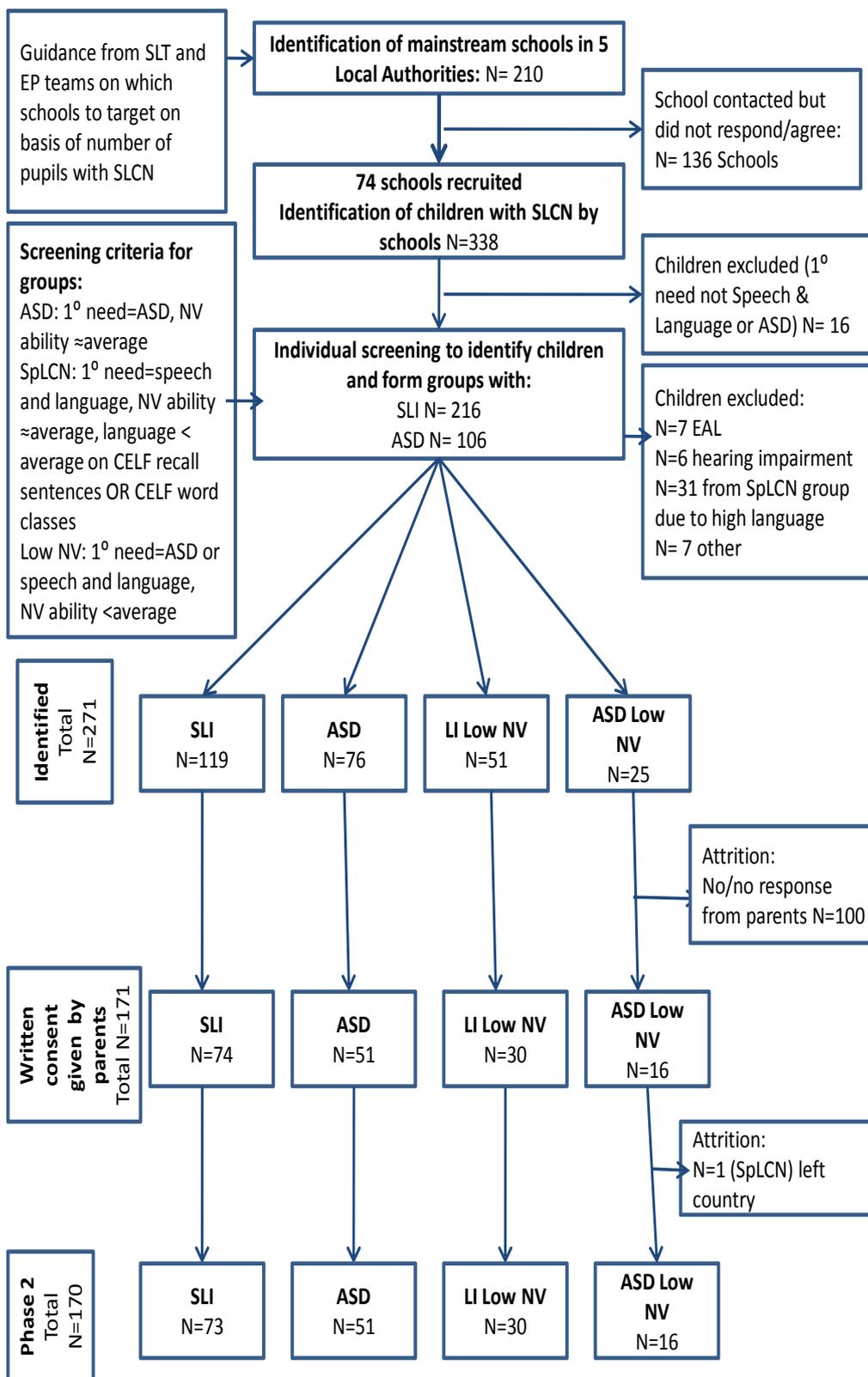


Figure 5.1: Flow chart of participants for screening and phase 2 of the prospective study

It should be noted that the screening phase resulted in the emergence of two additional groups of students. These all had ASD or language and communication needs as a primary need but non-verbal ability below our research criterion. These two groups were included in the study not only for methodological reasons but also in order to allow the investigation of these children’s needs and developmental trajectories. As a result the four groups are: specific language impairment(SLI); autism spectrum disorder (ASD); language impairment with low non-verbal ability (LI low NV); ASD with low nonverbal ability (ASL low NV).

Phase 2

Of the 271 participants initially identified, opt in parental consent was given for 171 of the children. These students were further assessed for the second phase of the project (N = 171). At this stage, 125 of the participants were attending mainstream provision, 31 were educated in specialist provision in mainstream schools for pupils with language difficulties and 15 in mainstream schools with ASD provision. Table 1 below provides a breakdown of the participants by age group, gender and diagnostic group.

Table 5.1: Breakdown of participants per age group and diagnostic group

AGE GROUPS	Diagnostic Groups			
	SLI	ASD	LI low NV	ASD Low NV
5-6 years	27	6	5	2
7-8 years	16	14	9	6
9-10 years	14	10	5	3
11-12 years	17	21	11	5
Total	74	51	30	16

5.3 What we have done

During the second phase of the study data were collected from:

- Pupils: were assessed individually on a range of language, literacy, other cognitive measures and self-report questionnaires of socio-emotional development.
- Teachers: completed a questionnaire regarding curriculum differentiation and the strategies and special programmes used in the classroom to support and better meet children’s learning needs.
- SENCOs: completed a questionnaire asking them to specify the amount of support provided to the participants by school staff and other professionals.

- Classrooms: The pupils were observed in the classroom for 30 minutes during English lessons.
- Parents: completed questionnaires concerning their different aspects of their children’s social communication skills. Additionally, telephone interviews were conducted with parents asking them their insight on a range of issues including their children’s strengths and needs, and their satisfaction with the support their children were receiving.

Table 5.2 presents an overview of the measures used at screening and phase 2.

Table 5.2: Overview of domains assessed and measures completed by children, teachers, SENCOs and parents during the first two phases of the prospective study

Domain	Measures	Completed by	Phase of the study
Language	TROG	Children	Phase 2
	BPVS	Children	Phase 2
	CELF –II-UK	Children	Screening
Literacy	YARC	Children	Phase 2
	TOWRE	Children	Phase 2
	Spelling BAS	Children	Phase 2
	Writing	Children	Phase 2
Non-verbal ability	Matrices BAS	Children	Screening
	WASI Matrices	Children	Phase 2
Socio-emotional development	KIDscreen	Children	Phase 2
Behaviour	SDQ	Teachers	Phase 2
Social communication	SRS	Parents	Phase 2
	SCQ	Parents	Phase 2
	CCC-2	Parents	phase 2
Classroom support and behaviour	Classroom observation	Researchers	Phase 2
	Strategies and curriculum differentiation	Teacher questionnaire	Teachers
Support in school	SENCO questionnaire	SENCOs	Phase 2

The following sections compare our four groups with respect to pupils’ needs on key measures of language, literacy, social communication and socio-emotional development.

5.3.1 Language

The pupils were assessed on a range of standardised and age-appropriate measures, tapping different aspects of language. We report on pupils' performance on three tests: the British Picture Vocabulary Scale (BPVS-3)¹⁷ the Test for Reception of Grammar (TROG-E)¹⁸ and the Clinical Evaluation of Language Fundamentals (CELF-4)¹⁹.

One-way ANOVAs controlling for age were carried out to explore whether the groups differed. Where a significant overall group difference was found Bonferroni post hoc tests (pairwise comparisons) were carried out to see which groups differed. These findings are presented in Figures 5.2 and 5.3.

As Figure 5.2 shows all groups performed poorly on these measures. In addition there was a significant main effect for the measure of vocabulary understanding (BPVS)²⁰. Children with ASD performed significantly better than the other three groups of participants, who did not differ from each other. In contrast for the TROG there were no significant group differences.

Composite expressive and receptive language measures are presented in Figure 5.3. In terms of expressive language the ASD group performed significantly better from the other three groups of participants who did not differ from each other. The CELF receptive language measure provided a more complex picture as in the previous analysis the participants in the ASD group performed significantly better than the other three groups. However for this receptive language index score the LI low NV group scored the poorest and these scores were significantly worse than the SLI group.

¹⁷ Dunn et al., (2009),

¹⁸ Bishop, 2005)

¹⁹ Semel & Wiig, 2006)

²⁰ The full analyses will be reported in the Technical Report for the Prospective Longitudinal Study, to be published with the Final; Report of the BCRP

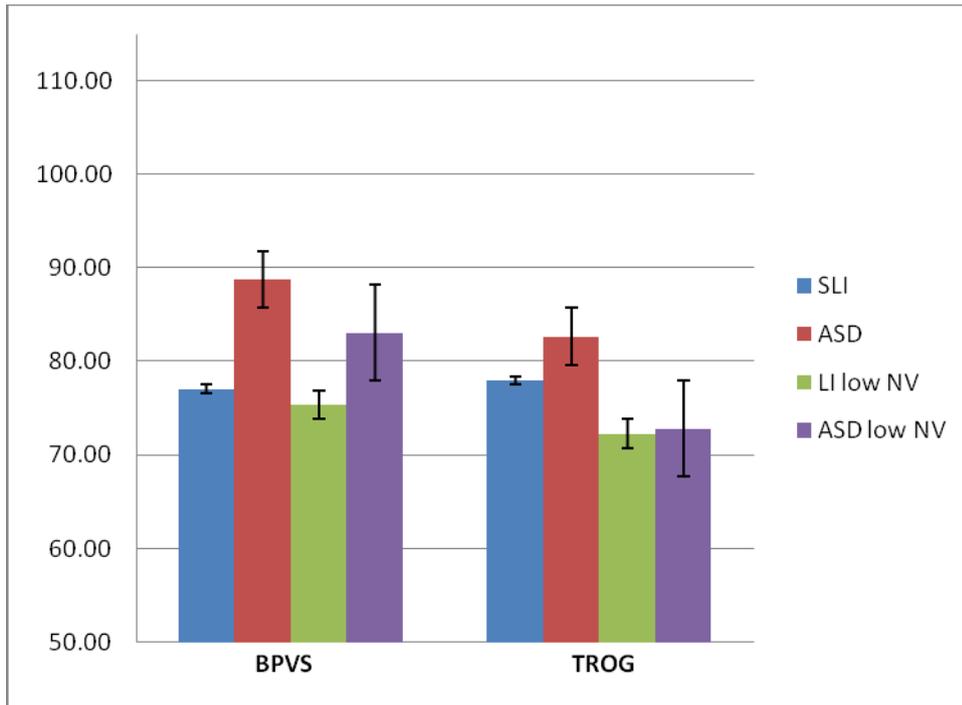


Figure 5.2: Group comparisons for receptive vocabulary and grammar controlled for age of assessment: BPVS and TROG

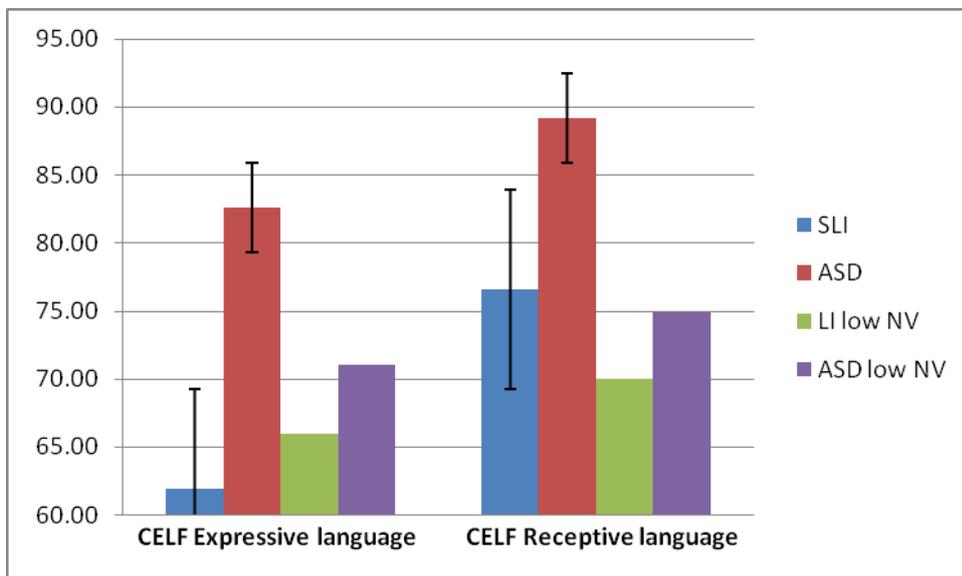


Figure 5.3: Group differences on CELF expressive and receptive scales controlled for age of assessment

These analyses suggest that on average the participants in the ASD group are performing better on language measures than the other groups. However, as figure 5.4 shows these average differences mask a significant degree of overlap between the groups.

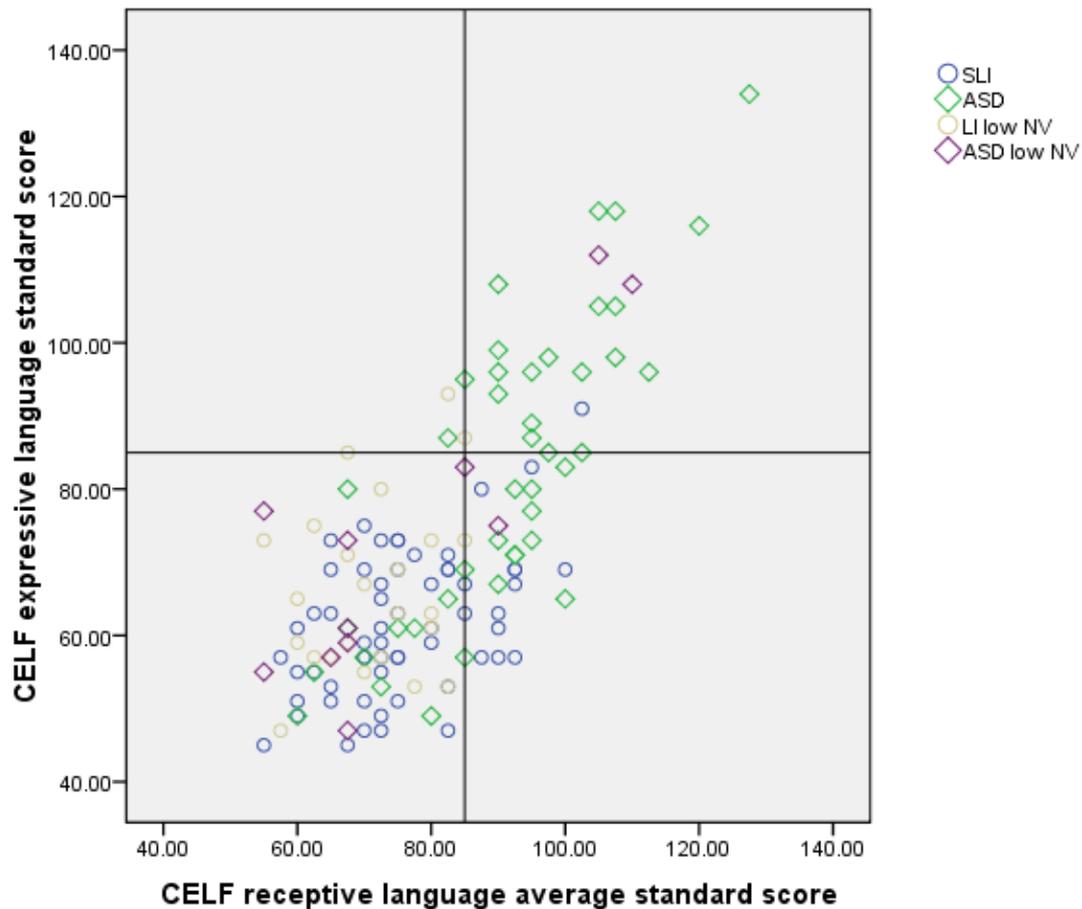


Figure 5.4 Correlation matrix between expressive and receptive scores on the CELF with individual markers by group.

Summary of findings

- **All groups of participants presented with depressed scores on receptive and expressive language**
- **On average participants with ASD performed better in areas of structural language than children with SLI, LI low NV and ASD Low NV.**
- **One only participant with SLI or LI low NV performed (just) within the average range for expressive language ability**
- **There was significant overlap between the groups demonstrating the significant variability within the groups**

Literacy skills

Reading comprehension was measured by the York Assessment of Reading for Comprehension (YARC; Snowling et al., 2009), single word reading accuracy was measured by the Single Word Reading Test (included in the YARC) and spelling by the British Ability Scales Spelling measure (BAS Spelling, Elliot et al., 1997).

The ASD group obtained significantly higher scores than the SLI and the LI Low NV groups on measures of single word reading and reading comprehension (Figure 5.4). The mean score for the ASD group was in the average range for all three measures whereas both the SLI group and the LI low NV group showed depressed performance. For single word reading and single word spelling both ASD groups scored significantly higher than the groups identified with primary language needs. In contrast for reading comprehension the ASD group scored significantly higher than all the other three groups. The ASD group also produced significantly more words in their written texts than the SLI group and the low nonverbal group but not the ASD low NV.

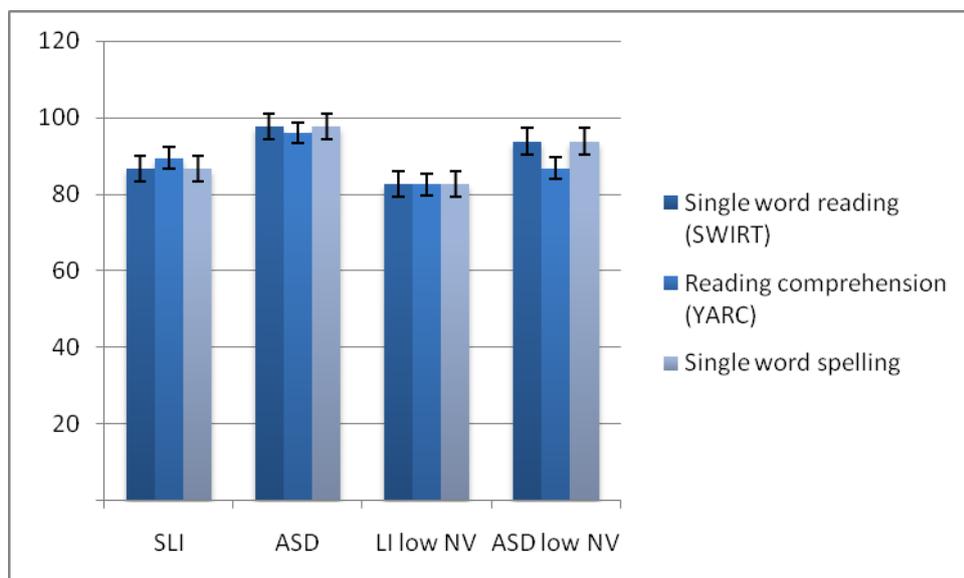


Figure 5.4: Group comparisons of mean SWRT, YARC reading comprehension and spelling

Summary of findings

- **Scores for the ASD group were within the average range for single word reading, reading comprehension and spelling**
- **Pupils with SLI and those with LI low NV had depressed scores on all the literacy measures**
- **The ASD group and the ASD Low NV outperformed the SLI and the LI Low NV in both single word reading and spelling.**
- **Performance for reading comprehension was significantly higher for the ASD group compared with all other groups, who did not differ between themselves**
- **In the writing task participants with LI low NV produced the fewest words and produced significantly fewer words than participants with ASD.**

Social communication

Parents of 120 participants (45 parents of children with SLI; 43 parents of children with ASD; 23 with LI Low NV; 9 ASD with Low NV) completed questionnaires examining different aspects of social interaction and communication: the Social Responsiveness Scale (SRS; Constantino & Gruber, 2005) and the Social Communication Questionnaire (SCQ; Rutter, Bailey, & Lord, 2003), measures used to assess ASD symptoms, and the Children's Communication Checklist (CCC-2; Bishop, 2003). Here we report data from the SRS and the CCC-2.

The SRS comprises five different subscales: social awareness, social cognition, social communication, the social motivation and autism mannerisms. Additionally, a total score is calculated. Higher scores indicate impairment and T-scores higher than 60 indicate clinically significant difficulties.

The CCC-2 comprises 70 multiple choice items divided into ten scales and aims to screen for children who may experience language impairment and to identify difficulties with

pragmatic skills in children with language and communication problems. Low scores indicate greater difficulties.

Social Responsiveness Scale (SRS).

Both the ASD and the ASD low NV groups had significantly higher mean standard scores on the total SRS than the language impaired groups (ASD M = 66; ASD low NV M= 71; SLI M = 57; LI low NV M = 56). As shown in Figure 5.5, the ASD and the ASD Low NV groups showed greater levels of difficulties on all subscales of the SRS compared to the SLI and the LI Low NV groups. On all the subscales participants with ASD (ASD and ASD low NV) had significantly higher scores than the language impaired groups.

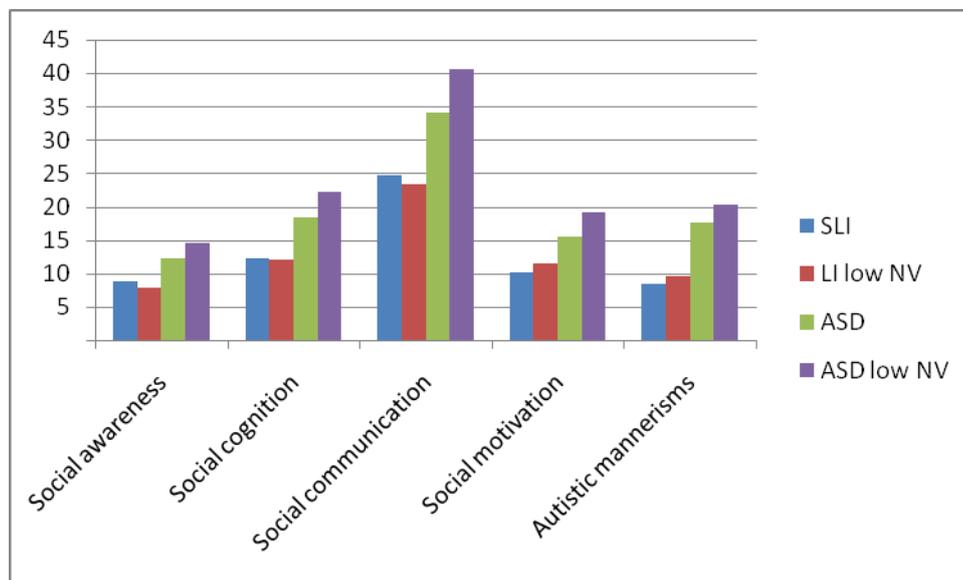


Figure 5.5: Profile of the Social Responsiveness Scale (SRS) raw scores for the four cohorts controlled for age

Note. High scores indicate greater levels of impairment;

Child Communication Checklist (CCC-2):

Analyses of covariance, with age as the covariate, were conducted on the CCC-2 subscales. There was no overall significant difference between the four groups for the general communication index. However, there were main effects for speech ($F(3, 85) = 4.149, p = .009$), syntax ($F(3,84) = 5.223, p = .002$) and social interaction deviance ($F(3,83) = 14.11, p < .001$). There were two patterns of results. First, the SLI group had significantly greater levels of difficulty than the ASD group with both speech ($p = .009$) and syntax ($p = .001$). Second, the ASD group had significantly more difficulties, showing higher levels of social interaction deviance, than both the SLI group ($p < .001$) and the LI low NV group ($p = .001$) and more difficulties on the Interests scale than the SLI group ($p = .025$). No other group

comparisons were significant. Figure 5.6 presents the results from the Social Interaction Deviance scale as an example.

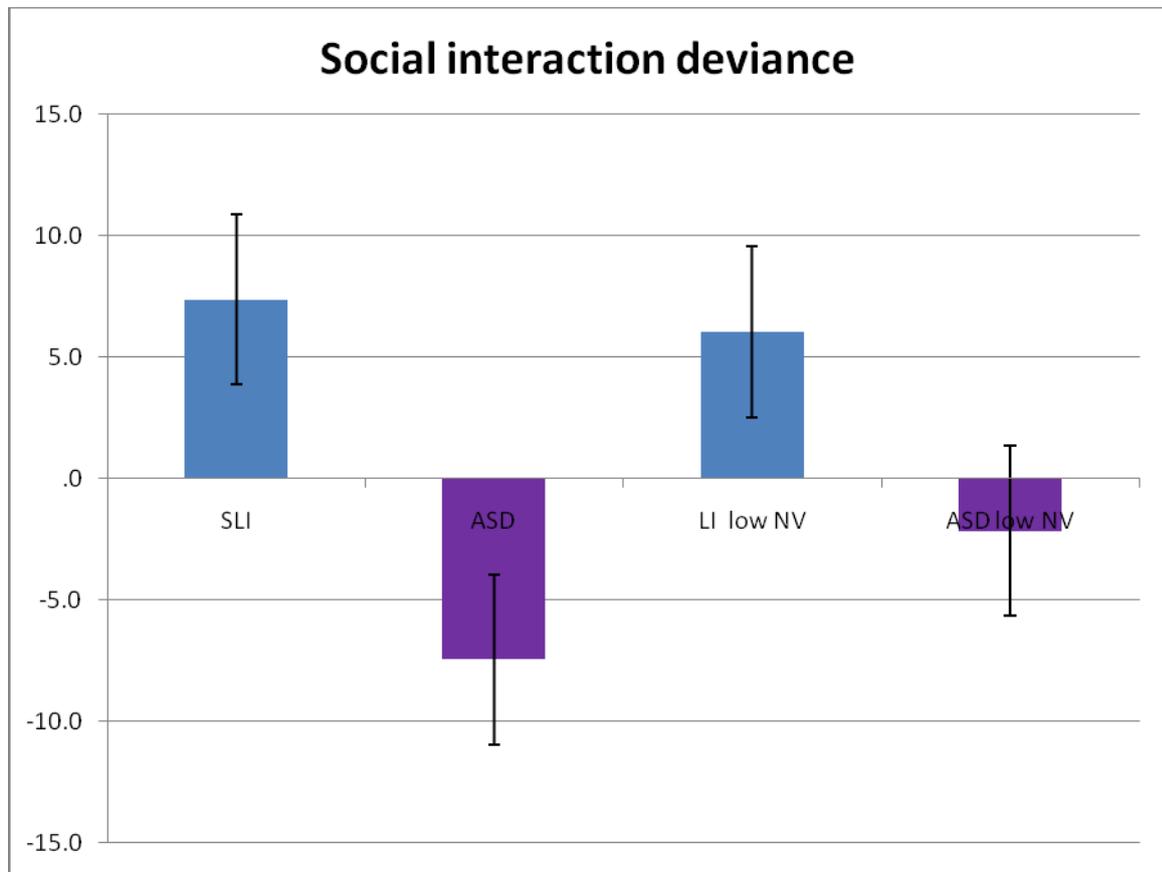


Figure 5.6: Profile on the Child Communication Checklist (CCC-2) Social Interaction Deviance Scales (raw scores)

Note: Social interaction deviance composite: >8 indicates SLI, <0 pragmatic language impairment or ASD

Summary of findings

- The ASD group was significantly more impaired than the SLI and LI low NV groups on measures of social interaction .
- The SLI group experienced significantly more difficulties in structural aspects of language (speech, syntax). The ASD group had significantly higher levels of social interaction deviance than the SLI and LI low NV groups.

5.3.2 Socio-emotional development

Pupils also completed a self-report measure of subjective health and well-being, the 52 KIDscreen (Ravens-Sieberer & the KIDSCREEN group, 2005). This questionnaire comprises 52 items assessing different aspects of quality of life (well being) including physical Well-being, psychological well-being, moods and emotions, self-perception, autonomy, parent relations and home life, social support and peers, school environment, social acceptance (bullying), and financial resources.

A general trend was that children in all four groups expressed positive views about their well-being when compared to the norms where 50 is the mean (see Figure 5.7).

There were significant group effects on all measures except bullying with the SLI group generally showing higher mean scores than the ASD group indicating greater well being. Four of these differences were highly significant: autonomy $p = .001$; parent relations and home life, $p < .001$, financial resources $p = .001$; peer relations $p = .022$.

Generally the LI low NV group had similar scores to the SLI group. However, there were significant differences between these two groups for moods and emotions ($p = .001$) and self perceptions ($p = .001$), in both cases the SLI group had worse levels of well being.

There was no significant difference between the ASD and ASD low NV groups on any scale of the KIDscreen.

The LI low NV group had significantly better well-being scores compared with the ASD group on scales: moods and emotions ($p = .003$), self perceptions ($p < .001$), autonomy ($p = .003$) and parent relations and home life ($p < .001$).

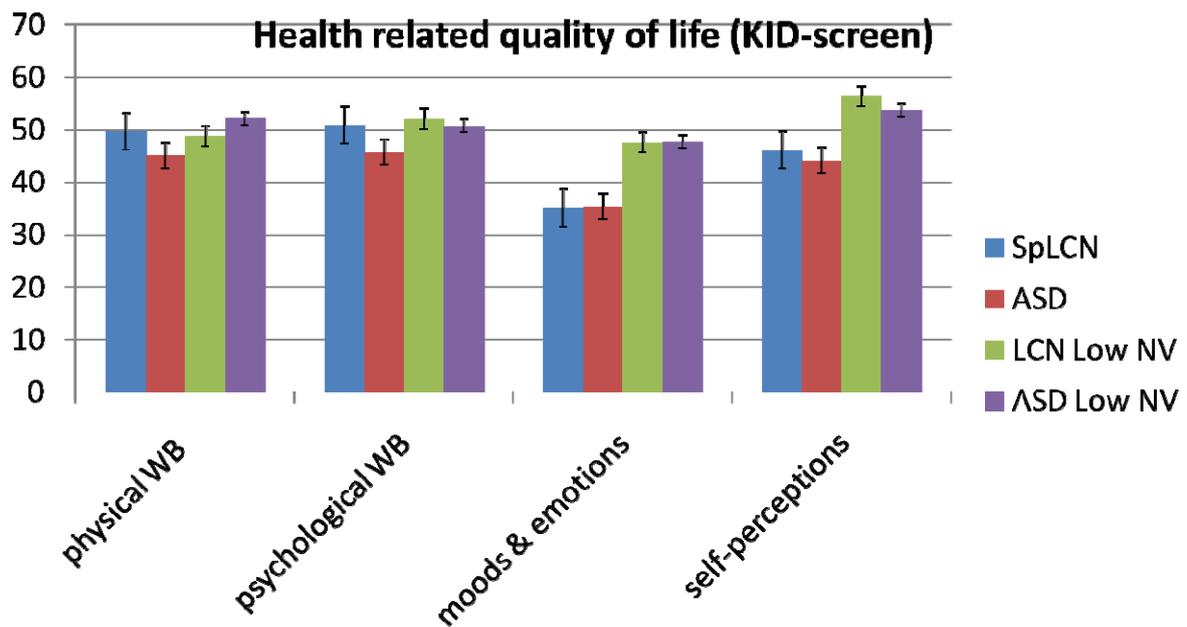


Figure 5.7: Profile on subscales of the KID-screen

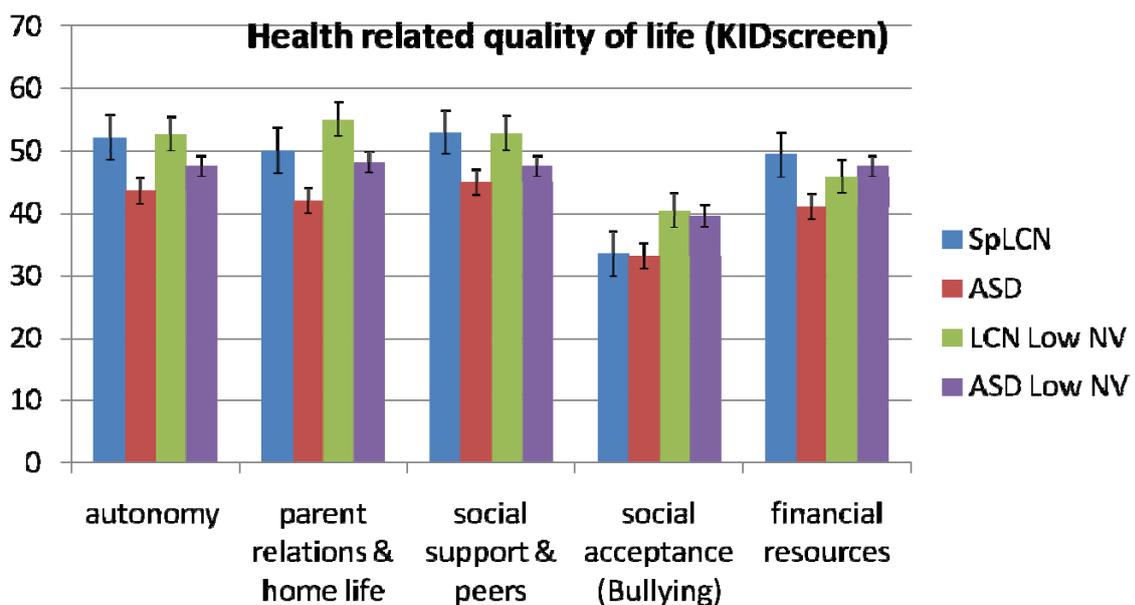


Figure 5.8: Profile on subscales of the KID-screen

5.3.3 Support in schools

There is limited previous research examining the support and differentiation of the curriculum for children with SLCN (.i.e. for our SLI and SLI low NV groups) and ASD. During the second phase of the prospective study we had the opportunity to gain information about support in classrooms from both teachers and special educational needs coordinators (SENCOs).

Teachers completed questionnaires related to curriculum differentiation and use of

classroom strategies designed to facilitate children's learning. Additionally, SENCOs provided us with valuable information related to the support the students were receiving from school staff and external professionals.

Strategies used by classroom teachers

Firstly, teachers were asked about curriculum differentiation. Eighty per cent of teachers reported that they differentiated the curriculum for the pupils. Furthermore, it was reported that the curriculum was differentiated for 92% of the participants for literacy. No differences were found concerning differentiation in relation to children's educational placement.

The next set of questions related to how the curriculum was differentiated for the specific pupils. Teachers were asked to report their use of 11 different strategies, derived from what is known about effective practice and special needs pedagogy (Norwich & Lewis, 2005). As can be seen in Figure 5.10 below, the most reported strategies were providing task related feedback and the use of extended feedback. The least reported strategies were the use of checklists and spacing short work periods with breaks.

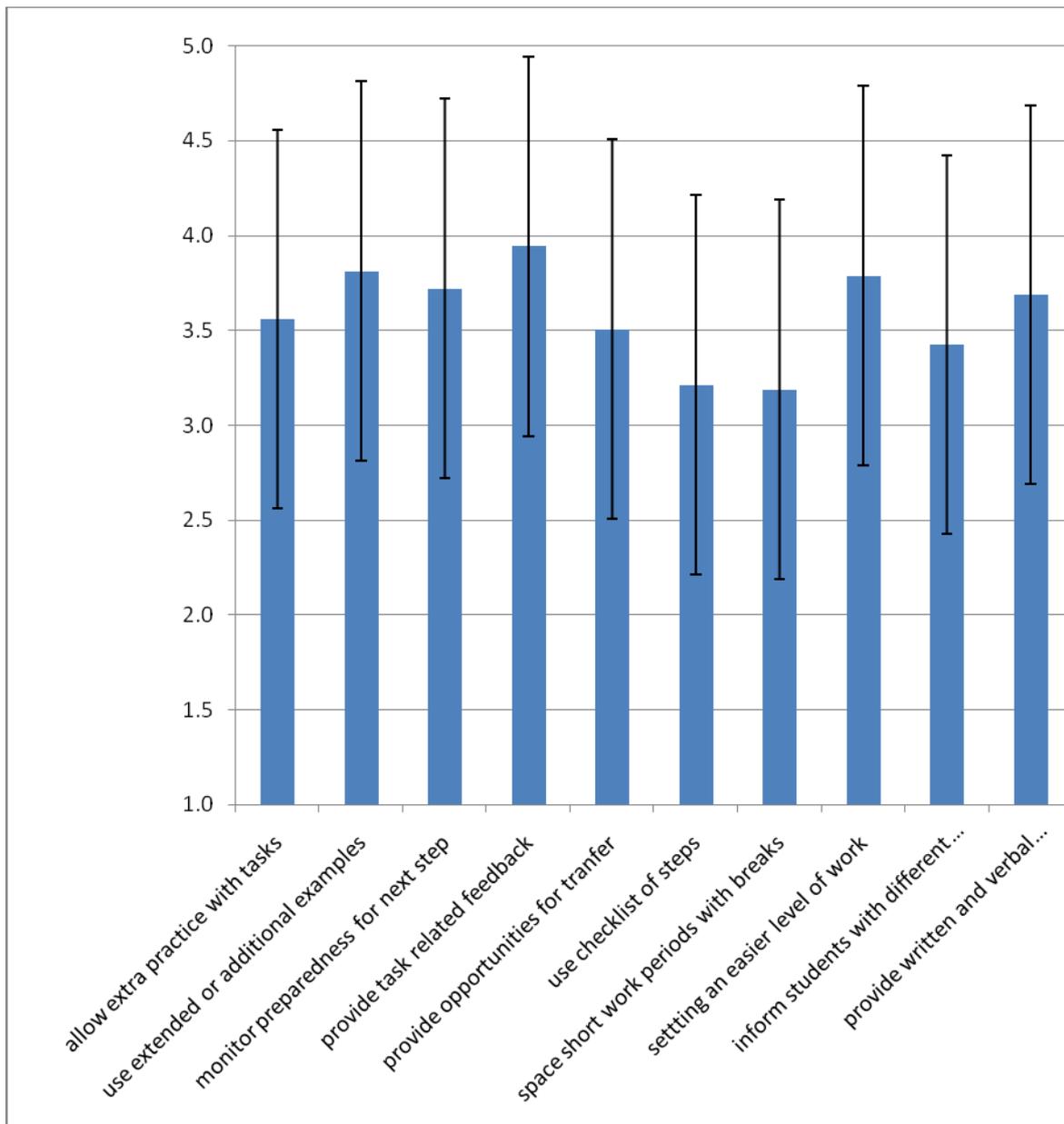


Figure 5.10: Strategies used by classroom teachers' to support children's learning

The teachers were also asked whether they were using any special programmes to support pupils' learning. As Figure 5.11 shows below, there was very little evidence of use of special programmes, as the majority of the teachers (78%) reported that they never used special programmes in the classrooms.

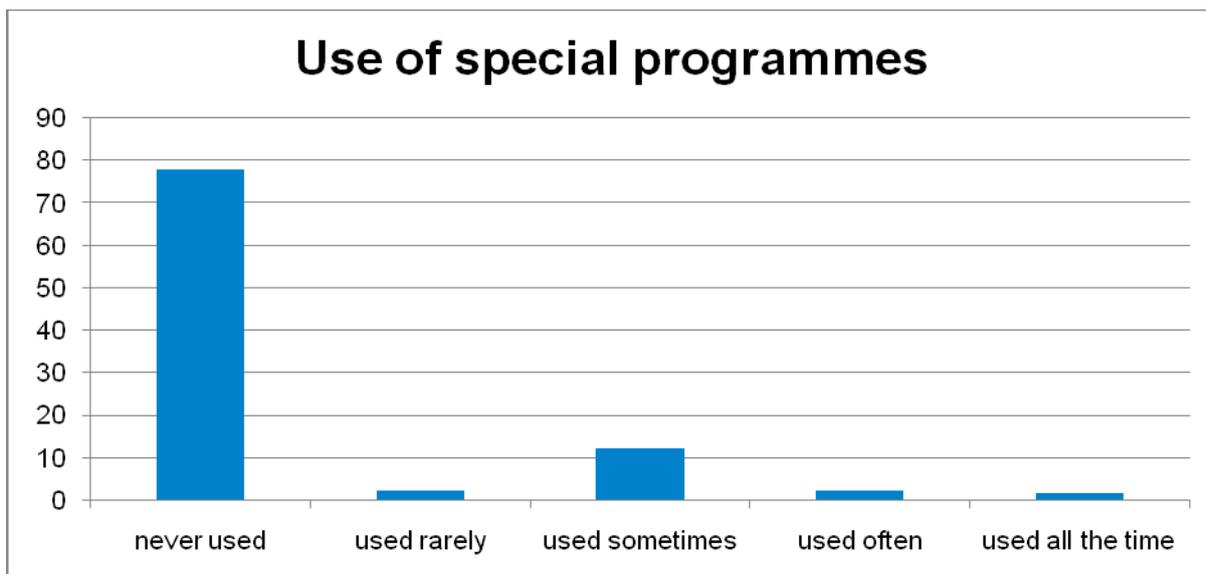


Figure 5.11: Use of special programmes by classroom teachers.

5.4 What we are doing next

Observation data

During the second year of the prospective study classroom observations of 30 minutes were conducted during English lessons. This component of the prospective study was designed to address the gap in our knowledge of classroom processes for pupils with SLCN and ASD. The aim of the observation schedule was to provide a unique data set examining the learning contexts and teacher pedagogy during literacy instruction. Literacy instruction was identified as a key area of risk for many of the pupils and an area where we would predict differentiation.

A total of 156 observations were conducted. The classroom observations gave us a novel insight into the ways pupils were supported during literacy and how they responded to lessons. The rich data gathered from the classroom observations are currently being analysed.

Final round of assessment

In the last phase of this study we will capture transition from primary to secondary school for the 25% of the sample who will be making this move. Data will be collected from pupils and teachers. For the teachers we will consider differentiation and support and aspects of children's social communication skills to complement the data collected in earlier phases of the study. At this point we will also collect additional pupil data by further assessing the strengths and needs of the pupils who have been participating in the study. We will repeat

language, literacy, non-verbal and health-related quality of life measures used in previous stages of the study in order to obtain a better understanding of children's needs over time .

6. LANGUAGE AND LITERACY ATTAINMENT OF PUPILS DURING EARLY YEARS AND THROUGH KS2: DOES TEACHER ASSESSMENT AT FIVE PROVIDE A VALID MEASURE OF CHILDREN'S CURRENT AND FUTURE EDUCATIONAL ATTAINMENTS?²¹

Margaret Snowling, Charles Hulme, Alison M Bailey, Susan E Stothard, and Geoff Lindsay

6.1 Background

It is well-established that language skills are amongst the best predictors of educational success. Consistent with this, findings from a population-based longitudinal study of parents and children in the UK indicate that language development at the age of two years predicts children's performance on entering primary school.²² Moreover, children who enter school with poorly developed speech and language are at risk of literacy difficulties²³ and educational underachievement is common in such children.^{24,25} Whatever the origin of children's problems with language and communication, the poor educational attainment of children with language learning difficulties is an important concern for educational policy. The research to be reported here addresses the question of whether teacher assessment and monitoring could be used to identify children with language difficulties in need of early interventions.

6.2 Aims of the Study

The overarching aim of this study was to investigate whether teacher assessment at the end of the Early Years Foundation Stage (EYFS) around 5 years, based on ongoing observation, provides a valid measure of children's current development and their educational attainments in future years. In addition, the study investigated which factors, both within the child and within the environment, place a child at risk of language and literacy difficulties?

²¹ A full version of this study is being published in parallel with this 2nd Interim Report

²² Roulstone et al. (2011)

²³ Stothard et al. (1998)

²⁴ Conti-Ramsden et al. (2009)

²⁵ Dockrell et al. (2011)

6.3 What we have done

To address the research questions we used data from three cohorts of children entering all 50 maintained primary schools²⁶ within one local authority in a 3-year period from September 2006 to July 2009. We followed the progress of all of these children in acquiring literacy skills with data available on pupil progress through the ‘Phonic Phases’ (validated as good measures of attainment in separate studies²⁷).

Cohort 1 (entering September 2006) was assessed against the FSP; longitudinal data include end of National Curriculum levels at the statutory end of KS1 assessment, and language and literacy data from a representative sample followed up in Year 3 during March 2011.

Cohorts 2 and 3 (entering 2007 and 2008 respectively) were assessed on the EYFSP which replaced the FSP. Data are available for Cohort 2 for two years and Cohort 3 for one year. Summary data for these three cohorts are shown in Table 6.1 below.

Table 6.1: Cohort contextual information

Cohort	Entry to Reception year	N	% Male	Mean age at T3 (months)	% Free School Meals	% SEN register	% EAL
1	2006-7	1781	51	64.7	10.0	11.3	5.3
2	2007-8	1849	52	64.5	10.7	16.2	5.6
3	2008-9	1748	52	64.3	10.2	5.8	5.1

Notes: T3 = end of first year in school; SEN: special educational needs; EAL: English as an Additional Language

The percentage of children with EAL was low for the LA in this period, as compared with the national average of 16% of children with EAL in primary schools (DFE, 2007). Similarly, the percentage of children eligible for Free School Meals is somewhat lower than the national average (17%).

²⁶ Excluding one special school

²⁷ Snowling et al., (2009); Snowling et al., (2011)

6.4 Research Questions and Main Findings

6.4.1. Does a child's language development as measured against the Foundation Stage Profile (FSP)/Early Years Foundation Stage Profile (EYFSP)²⁸ correlate with performance on objective language tests administered during Early Years?

To assess this question, we correlated children's scores on the EYFSP with their scores on 'Language Link', a normed language assessment battery (see www.speechlink.co.uk) administered at school entry. The test consists of 50 items and provides a reliable measure of receptive language (understanding).

The correlation between the Language Link total score and the EYFSP score was .62. This is shown in Figure 6.1 below. The correlation between the Language Link total and the Communication, Language and Literacy Scale was .63.

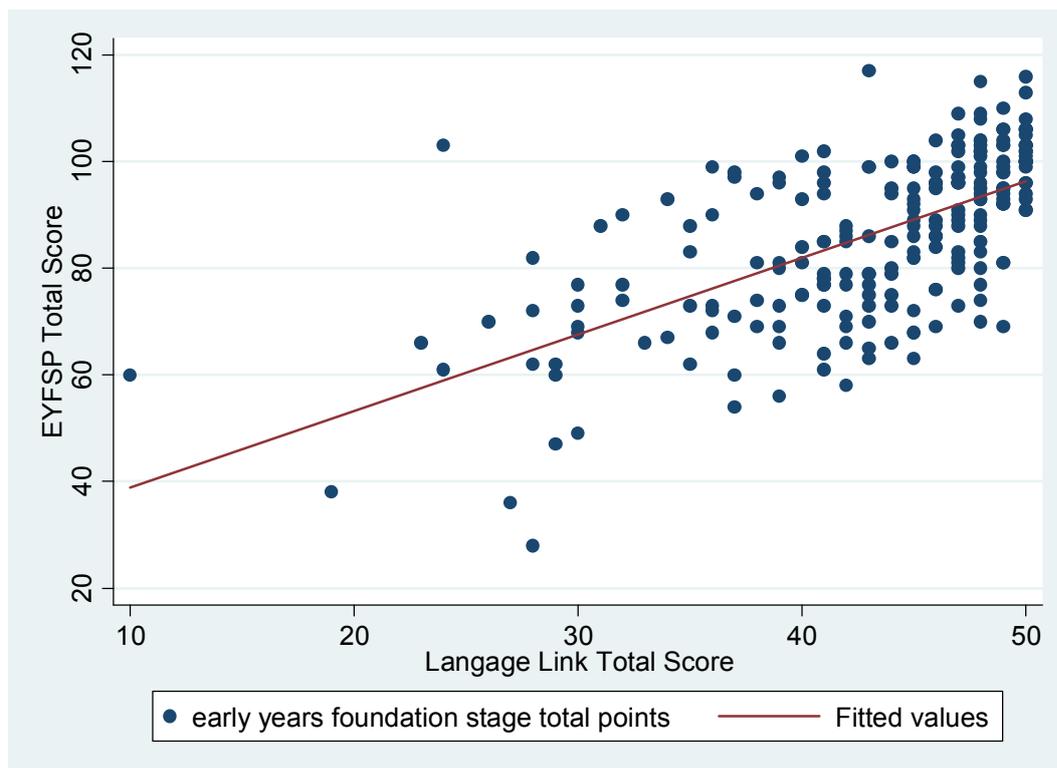


Figure 6.1. Relationship between language at school entry and EYFSP score at end of Reception year

In summary, the **Early Years Foundation Stage Profile Total score** was predicted by the **Language Link Total Score** recorded some nine months earlier, shortly after school

²⁸ The Early Years Foundation Stage (EYFS) replaced the Foundation Stage (FS) in September 2008. <http://nationalstrategies.standards.dcsf.gov.uk/node/83972>

entry. It can be concluded that the EYFSP provides a valid measure of understanding of spoken language.

6.4.2. Do the scales of the Early Years Foundation Stage Profile provide measures of the abilities they purport to assess?

We collected pupils' data from the Early Years Foundation Stage Profile (EYFSP) from the cohort of 1658 children entering 38 schools in September 2009. The EYFSP (as used at the time) comprised 13 scales within 6 areas of learning with a total of 117 items. Each point was rated as true (achieved) or false (not achieved). On each scale, scale points 4-8 are the early learning goals and scale point 9 describes the attainment of a child who has achieved scale points 1-8 and is working consistently beyond early learning goals.

The analyses of data from a whole cohort on the EYFS allowed consideration of: (1) How well each item of the profile taps what it purports to measure (i.e., do all the items in one scale tap the same underlying ability)? (2) Whether the scales are independent from one another (e.g., does the Communication, Language and Literacy Scale test something different from the Problem Solving, Reasoning and Numeracy Scale, as it is supposed to do)?

We used data modelling following an iterative process to find the best fit to the assessment data. The best fit was a model with 6 factors: Language, Literacy, Mathematics, Social, Physical and Creative Development. In terms of the EYFSP, this means that there was validation for six of the scales (the scales are not independent of each other). The **Language scale correlates very strongly with all of the other scales, suggesting it is a fundamental ability associated with progress in all other domains of development.** In addition, there were very strong correlations between the Literacy and Mathematics scales and each of these factors correlated strongly though to a lesser degree with Social, Physical and Creative Development.

6.4.3. Does the Early Years Foundation Stage Profile predict future progress in language and literacy as measured by school-based assessments? Which scales are the best predictors of educational attainments?

We used data from the EYFSP for Cohorts 1 and 2, and from Phonic Phases assessments as predictors of subsequent performance. As outcomes we used data from the end of Key Stage 1 statutory assessment when pupils are assessed in Reading, Writing and Mathematics. We also validated the findings using Phonic Phases as outcomes. At the

time of data collection, the implementation of phonics teaching in York schools (after Rose, 2006) included systematic assessment of basic phonic skills on a regular basis during the first 3 years of instruction (Phonic Phases). The current data set included ratings of phonics progression from each term during the first 3 years in school; here data were used from the third term in Reception (Phonics-R) and the third term in Year 1 (Phonics-Y1).

There were moderate to strong correlations between EYFSP scores and KS1 attainments (see Table 6.2 below).

Table 6.2. Correlations between EYFSP scores for Personal, Social & Emotional Development (PSE-total); Communication, Language and Literacy (CLL-total), Problem solving, reasoning and numeracy (MAT-Total) and the Total Profile score (FSP-total) and attainments in KS1 two years later.

	Personal, Social and Emotional	Communication, Language and Literacy	Problem solving, reasoning and numeracy	FSP-total
KS1Reading	.47	.71	.66	.51
KS1Writing	.48	.69	.63	.49
KS1Mathematics	.46	.66	.65	.48

It can be seen that neither the *Total score* nor the score for *Personal, Social & Emotional Development* correlated well with later attainments. **There were strong correlations between the *Communication Language and Literacy* and the *Problem solving, reasoning and numeracy* scales and later *Literacy and Mathematics* attainments.** The highest correlations were between CLL-total and both Reading and Writing at the end of KS1 (see Figure 2 below) but there was still about 50% variability in attainment unexplained.

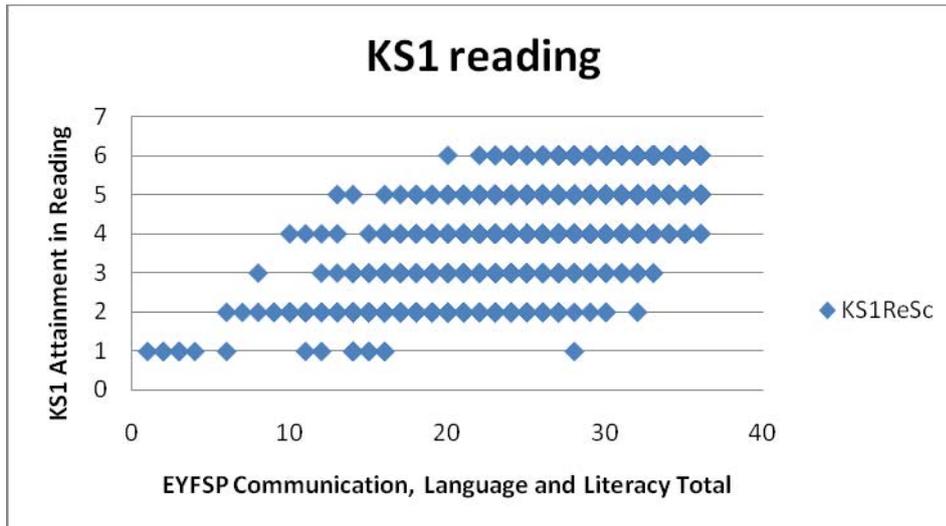


Figure 6.2. Relationship between EYFSP –Communication, Language and Literacy score (CCL-total) at end of Reception year and KS1 Attainments in Reading

Note: 1: working towards level 1, 2: level 1, 3: level 2c, 4: Level 2b, 5: level 2a, 6: level 3

To consider which of the *Communication Language and Literacy scale* scores was the best predictor of later outcome, we next conducted correlations between these and KS1 attainments (see Table 6.3).

Table 6.3 Correlations between Communication Language and Literacy scales, Phonic Assessments and KS1 attainments two years later.

	Language for communication and thinking	Linking letters and sounds	Reading	Writing	Phonics-R	Phonics-Y1
KS1Reading	.52	.69	.66	.68	.61	.73
KS1Writing	.51	.66	.63	.67	.60	.71
KS1Mathematics	.48	.64	.62	.64	.59	.66

Both CLL-reading and CLL-writing correlated strongly with attainments not only in Literacy but almost as much in Mathematics. The ratings on the scale '*Language for Communication and Thinking*' correlated moderately with later attainments but the lower correlations are to be expected since the KS1 attainment tests focus on written and not spoken language so there is a more direct link with earlier literacy-related skills.

As an alternative to the EYFSP scores, we examined how well teacher ratings of children's progress in phonics at the end of reception (Phonics-R) and the end of year 1 (Phonics-Y1)

predicted their subsequent attainments in KS1 Reading, Writing and Mathematics. **Ratings of progress in phonics were strong correlates of reading and writing attainments;** correlations with Mathematics were weaker.

Thus, for predicting attainments at the end of KS1 from ratings made at the end of Early Years (Reception class), the best measures appear to be CLL-total and Phonics progress during the first three terms of formal reading instruction (Phonics-R).

6.4.4. Does the Early Years Foundation Stage Profile predict future progress in language, literacy and numeracy, as measured by objective tests in year 3?

A sample of children from Cohort 2 was assessed in year 3 on a battery of measures to assess language, literacy and numeracy skills. The sample was recruited from 10 schools which were selected randomly, and should be representative of schools in the authority. The tests given included measure of Receptive Vocabulary, Listening comprehension, Reading, Spelling and Arithmetic.

The key question was how well performance in these skill areas is predicted by EYFSP scores recorded three years later. We focused on the total score and the score for *Communication, Language and Literacy* (CLL). The score for *Communication, Language and Literacy* showed moderate correlations with measures of reading, spelling and reading comprehension, and somewhat weaker correlations with arithmetic, vocabulary and listening comprehension in Year 3. It was a slightly better predictor of later attainments than the EYFSP total score. It was also a marginally better predictor than the rating of children's progression in phonics at the same stage.

A final question concerned how much variability in children's literacy outcomes in year 3 can be predicted from combinations of predictor variables. **Ratings of *Communication, Language and Literacy* predicted 34% of the variance in children's year 3 attainments;** the prediction was much better if phonics progress at the end of year 1 was also included in the model which then accounted for 47% of the variance.

6.4.5. In what ways do children making slow progress through Early Years and KS1 differ from typically achieving children on the Early Years Foundation Stage Profile?

For this set of analyses, we defined 'slow progress' as either working towards Level 1 (W) or at Level 1 in the Key Stage 1 Reading assessment. As predictors we examined the following child factors: Gender, Mother Tongue (EAL or not), Eligibility for free school meals (FSM) and Deprivation Rank obtained from postcodes (IDACI).

According to the available data, 360 children had attainments below the national expectation (10.8% of the sample), 2049 children were performing at the expected level (61.2% of the sample). To investigate what differentiated the children who were progressing slowly from the typically developing children, these two subgroups were compared. The comparisons were made retrospectively examining performance on the EYFSP, in phonics progress and on demographic variables. Children performing at above Level 2 (at Level 3) were excluded from these analyses.

The data showed that **children who attain below the nationally expected level in Reading at the end of KS1 are typically characterized by delayed development of *Communication, Language and Literacy*** as indicated by their standing against the EYFSP. Moreover, their progress in phonics was poor at the end of Reception class and at the end of Year 1.

Turning to demographic data, **more of the low attainers were boys, more were eligible for free school meals and more had English as an additional language** as compared to those who were typically developing²⁹. Some 64.5% of the low attainers were known to their schools as having SEN and 7% had statements. These data should be interpreted cautiously because SEN data were not collected concurrently but a year earlier (in Year 1) at a time when many schools may not yet have recorded children about whom they had concerns. Furthermore, some of these children may have been receiving support to address their additional needs.

6.5 Summary and Conclusions

- Teachers can make valid judgments of children's development in language and literacy and can accurately monitor their pupils' progress in key reading skills.
- Children deemed by their teachers to be developing slowly after one year in school typically perform below national expectations in KS1 assessments.
- Groups most at risk of difficulties are boys, children with EAL and those who are eligible for free school meals. Demographic variables (Gender, Mother Tongue, Eligibility for Free School Meals and deprivation) accounted for differences between children in *Communication, Language and Literacy as measured by the EYFSP*. Each has an independent effect.

²⁹ See also Section 3.3.2 for evidence of the relationship between SLCN and EAL at the stage of secondary education.

- Early identification of children’s additional needs is important and key elements of development can be assessed at age five. Children who attained below the nationally expected level in Reading at the end of KS1 were already developing slowly at the end of Early Years and their progress in phonics was poor both at the end of reception class and at the end of year 1. Slow developers were typically characterized by delayed development of *Communication, Language and Literacy*.
- The best predictors of educational success are measures of language, communication and literacy. Between 45 and 51% of the differences between children in Key Stage 1 attainments can be accounted for by teachers’ ratings of their *Communication, Language and Literacy* at the end of Early Years on the EYFSP.
- Of the EYFSP areas of learning, Communication, Language and Literacy is the best predictor of later attainment at KS1 and in year 3 not only in literacy but also in mathematics.
- Ratings of progress in phonics were also strong predictors of reading and writing attainments; correlations with mathematics were weaker.
- The current findings are in line with the proposal to reduce the number of items on the EYFSP from 69 to 17, and to split the Communication, Language and Literacy scale into ‘Language and Communication’ and ‘Literacy’.

6.6 Implications for Policy and Practice

The present study shows that teachers, when appropriately trained, can make valid judgments of children’s development in language and literacy when guided by a well validated, reliable measure, such as the EYFSP. In addition, teachers can accurately monitor their pupils’ progress in key reading skills without the need for formal tests (see also Snowling et al., 2011). Such ratings provide a valid screen for reading difficulties/dyslexia.

These findings make clear that a revised form of the EYFSP could be used to support monitoring and early identification of difficulties with language and communication. However, it is important to highlight that the present findings suggest a tool based on the EYFSP can be expected to account for around 50% of the differences between children. Hence, a substantial number of children will ‘fall through the net’ if the tool is used as a ‘one off’ screen so additional checks on progress must therefore be made at regular intervals. It follows that early identification should comprise a system of formative assessment that builds on and extends teachers’ understanding of language and communication, informed and enhanced by the use of a valid and reliable tool to support teachers’ assessments.

The findings also are in line with the proposal that the EYFSP should be shortened and modified to capture individual differences between children in foundation skills including language and early literacy.

Together the findings underline government priorities viewing Early Years as providing a critical foundation for learning. They also provide evidence relevant to the Government's consideration of proposals for the revision of the Early Years Foundation Stage Framework in the Tickell Review³⁰. Thus, early identification of children's additional needs is important; key elements of development can be assessed at age five; assessments at the end of Early Years can be used to identify children who are at risk of educational difficulties; and the best predictors of educational success are measures of language, communication and literacy. This proposal does not imply that there is a need for large scale record keeping. Rather, the judicious choice of the key behaviours to assess, guided by an evidence-base such as the one provided here, could streamline the process and reduce work load. Moreover this does not preclude the inclusion of items that monitor behaviours which do not predict attainment but may be linked with well-being (such as aspects of physical development).

School systems need to be aware that social disadvantage has its impact very early in schooling. Children from the most disadvantaged backgrounds may need additional support in Early Years to ensure a secure foundation for language and literacy development. Screening at the point of school entry should be considered in areas of high need. Children at risk of underachievement should have their additional needs recorded in a timely fashion, and early and effective intervention put in place, as recommended by the Tickell Review.

³⁰ <http://www.education.gov.uk/tickellreview>. The Government's consultation on the Tickell Review's proposals ended 30 September 2011.

7. SPEECH LANGUAGE AND COMMUNICATION NEEDS AND BEHAVIOUR

Julie Dockrell^{1,2}, Victoria Joffe¹, Gillian Baird² and Vicky Slomins²

¹ Study 1, ² Study 2

It is now well established that children with language impairment are more likely to experience behavioural difficulties than children without such problems³¹. Prevalence rates of about 35-50 per cent have been identified, (Lindsay et al., van Daal et al.) However, the research evidence shows important variations in relation to the type of behavioural difficulty; the type of language difficulty; and the effect of other factors including, literacy and the respondent who completes the questionnaire. Relationships between language and behaviour also vary according to age and the measure used to establish the difficulties experienced by the children.

The research evidence therefore indicates that, in general, children with developmental language difficulties are at greater risk than typically developing children of having behavioural, emotional and social difficulties (BESD) but the pattern is complex and relationships with language not always evident. Such data raise questions about the causality of the relationships between language and behaviour. As part of the BCRP we aimed to elucidate these issues by examining behaviour difficulties in two different groups of children with SLCN – a cohort of pupils attending a mainstream secondary setting (Study 1) and children attending a tertiary diagnostic centre (Study 2). In both cases parents had completed the strengths and difficulties questionnaire (Goodman, 1997). Study 1 analyses data from a group of year 7 secondary school pupils who scored average or below average in year 6 on the Key Stage (KS) 2 English standard assessment test (SAT). In addition, for this mainstream sample, teachers and pupils had completed the questionnaire and had been identified with SLCN in year 7 for a language intervention study (Joffe, 2011). Study 2 analysed data collected from parents of children being seen at a tertiary hospital setting and their siblings.

³¹ Beitchman et al., (1996); Fujiki, Brinton & Clark, (2002); Katelaars, Cuperus, Jansonius, & Verhoeven (2010); Lindsay, Dockrell & Strand, (2007); Tomblin, Zhang, Buckwalter, & Catts, (2000); van Daal, Verhoeven & van Balkom, (2007)

The interim report provides details of the initial analyses of these two cohorts with summaries of the implications from the individual studies. In both studies levels of difficulty are presented and relationships between language and BESD considered. The final section raises questions about the importance of further understanding the relationships between language, academic achievement and BESD.

7.1 Behaviour, emotional and social difficulties in secondary school pupils with speech, language and communication needs

This project explored the extent to which pupils with SLCN were reported to experience higher levels of BESD compared to a normative sample; whether there were differences between pupils, parents and teachers in reported levels of BESD and whether there were any statistically significant relationships between BESD and verbal and non-verbal ability, educational attainment, socio-economic status (SES) and gender.

7.1.1 Procedure

The data are cross sectional and come from a larger intervention study, which explores the behaviour, emotional and social functioning (BESD) of a cohort of year 7 pupils who scored average (4A-4C) or below average ($\leq 3A$) on key stage 2 English SAT in year 6 and were identified in year 7 with designated SLCN as defined by pupil level census data (PLASC). Teachers were asked to refer pupils who had scored low or below average in the KS 2 English SAT and/or any pupils they were concerned were experiencing academic difficulties in year 7 or appeared to have language difficulties. Pupils were assessed in school over 4 sessions of approximately 40 minutes.

7.1.2 Materials

Non-verbal ability was assessed with the Wechsler Intelligence Scale for Children (3rd Edition, Wechsler, 1991) WISC111 (picture completion, picture arrangement, coding, block design subtests), and verbal abilities assessed with the following language assessments: British Picture Vocabulary Scale II (BPVS Dunn et al., 1997), two subtests of the Clinical Evaluation of Language Fundamentals-4 (CELF4: Wiig & Semmel, 2006) (formulated sentences - FS, recalling sentences - RS), four subtests of the Test of Word Knowledge (TOWK: Secord & Wiig, 1992) [Receptive Vocabulary (RV), Expressive Vocabulary (EV), Multiple Contexts (MC), Figurative Usage (FU)] and the Expression, Reception and Recall of Narrative Instrument (ERRNI: Bishop, 2004). BESD was explored using Goodman's

strengths and difficulties questionnaire (SDQ) – self, parent and teacher versions (Goodman, 1997). A measure of SES was taken using maternal educational level.

7.1.3 Description of the Participants

A total of 352 year 7 pupils [aged 12;08 years ($SD = 4$ months)] from 21 mainstream secondary schools across two outer London boroughs took part in the study. Table 7.1 provides information of the sample with respect to gender, level of attainment in their key stage 2 English national assessment in year 6, mother’s highest level of qualifications, SEN status, and also indicates that none was currently seeing a speech and language therapist. The pupils with average scores (4A-4B) on their English test in year 6 were included in the study as they had been referred by their teachers as having difficulties with language.

Table 7.1: The participants

	Percentage
Gender	63% males ($n = 222$) and 37% females ($n = 130$)
Key stage 2 English in year 6	7% scored level 4A-B (average) 34% scored level 4C (low average) 59% scored 3A or below (below average) 3% data unavailable
Mother’s education	11% university level qualifications 55% school or college level qualification 13% no formal qualifications
Statement of special educational needs	3.4%
Currently seeing a speech and language therapist	0%

Non-verbal ability scores (Table 7.2) and language scores (Table 7.3) are presented as Z scores to allow comparison across measures. These have a mean of zero and a standard deviation (SD) of one. Participants scored within the lower part of the average range (i.e. about -1 SD) on all non-verbal subtests of the WISC111 and obtained a prorated performance IQ score of 84.7 ($SD = 14.2$). Performance on the different language measures varied. Participants scored within the average range on measures of narrative ability including storytelling, story recall and story comprehension (ERRNI) and in the understanding of vocabulary (BPVS and TOWK-RV), although receptive vocabulary was just

within the average range and different from the other measures. In contrast, they scored more than one standard deviation below the mean ($< -1 SD$) on all other language assessments including expression of single words (TOWK-EV), the understanding of multiple meanings (TOWK-MC) and figurative language (TOWK-FU) and the formulation and repetition of sentences (CELF-FS; CELF-RS). See Table 7.2 for language scores. As such, participants tended to experience difficulties with the structural aspects of language rather than with communicative skills, as measured in the tests used.

Table 7.2: Non-verbal Abilities of Participants

Non-verbal Performance Subtests of the Wechsler Intelligence Scale for Children (WISC111)	z scores ⁱ (SD)
Picture Completion	-.59 (.85)
Block Design	-.95 (1.0)
Picture Arrangement	-.84 (1.1)
Coding	-.50 (.94)
Overall Performance IQ	-1.0 (.94)

Table 7.3: Language Abilities of Participants

Language Measures	Z scores ³² (SD)
British Picture Vocabulary Scale (BPVS-II)	-.99 (.82)
Initial Story Tell: Expression, Reception and Recall of Narrative Instrument (ERRNI)	-.30 (.88)
Story Recall: ERRNI	-.23 (.88)
Comprehension: ERRNI	-.15 (1.1)
Formulated Sentences (FS) subtest of Clinical Evaluation of Language Fundamentals (CELF-4)	- 1.3 (1.0)
Recalling Sentences (RS) subtest of CELF-4	-1.2 (.92)
Receptive Vocabulary subtest of Test of Word Knowledge (TOWK)	-.82 (.74)
Expressive Vocabulary (EV) subtest of TOWK	- 1.4 (.57)
Multiple Contexts (MC) subtest of TOWK	-1.2 (.71)
Figurative Usage (FU) subtest of TOWK	-1.2 (.64)

³² Z scores Mean, of 0. $SD=1$

7.1.2 Results

7.1.2.1 Behaviour, Emotional and Social Functioning of Participants

Student (self) Reported SDQ

A series of one sample t-tests showed that this group reported significantly more behaviour, social and emotional difficulties (BESD), as measured by the total difficulties score (TD) of the SDQ than the normative sample³³ [$t(337) = 11.507, p < .001; \text{Cohen's } d = 0.65^{34}$]. This was true for all subscales of the SDQ. The pupils also reported to significantly lower levels of prosocial behaviours than the normative sample, and reported that their difficulties had a significant impact on their everyday life. These data are presented in Table 7.4.

Table 7.4: Responses on Strengths and Difficulties Questionnaire (SDQ) – Student report

SDQ responses	Group Mean (SD)	Goodman's normative sample ² Mean (SD) N = 4228	t value	Cohen's <i>d</i> (Effect size)
Total Difficulties N (total number of participants) = 338	13.89 (5.7)	10.3 (5.2)	11.51***	0.65
Emotional symptoms N = 341	3.70 (2.3)	2.8 (2.1)	7.07***	0.40
Conduct problems N = 344	3.19 (2.0)	2.2 (1.7)	8.93***	0.53
Hyperactivity N = 344	4.95 (2.3)	3.8 (2.2)	9.09***	0.51
Peer problems N = 344	2.10 (1.9)	1.5 (1.4)	5.88***	0.35
Prosocial N = 344	7.47 (1.8)	8.0 (1.7)	- 5.35***	- 0.30
Impact Subtest N = 341	.99 (1.5)	0.2 (0.8)	9.16***	0.65

*** $p < .001$ in all cases

Note: > 0.2 is a small effect, > 0.5 is medium and > 0.8 is large

³³ Normative data accessed from the SDQ website (<http://www.sdqinfo.org/>).

³⁴ For Cohen's *d* > 0.2 is a small effect, > 0.5 is medium and > 0.8 is large

Parent Reported SDQ

Parents of the participants reported their children to have significantly more behavioural, emotional and social difficulties, as measured by the total difficulties score of the SDQ than the normative sample [$t(206) = 9.703$, $p < .001$; Cohen's $d = 0.67$]. Higher levels of difficulties were reported for emotional functioning, conduct, hyperactivity and peer relationships than the normative sample and these difficulties were reported to have a significant impact on their children's lives. Parents did not however identify any differences in the number of prosocial behaviours displayed by their children and those of the normative group. These data are reported in Table 7.5.

Table 7.5: Responses on SDQ – Parent report

SDQ responses	Mean (SD)	Goodman's normative sample Mean (SD)	t	Cohen's d
Total Difficulties N = 207	12.08 (5.7)	8.2 (5.8)	9.70***	0.67
Emotional Symptoms N = 221	2.97 (2.3)	1.9 (2.0)	6.92***	0.49
Conduct Problems N = 222	2.08 (1.8)	1.5 (1.7)	4.66***	0.33
Hyperactivity Subtest N = 220	4.93 (2.7)	3.2 (2.6)	9.32***	0.65
Peer Problems N = 221	2.06 (1.78)	1.5 (1.7)	4.65***	0.32
Prosocial Subtest N = 224	8.56 (1.80)	8.6 (1.6)	-.35 ^{NS}	- 0.02
Impact Score N = 216	1.13 (1.7)	0.4 (1.2)	6.03***	0.49

*** $p < .001$, NS = not significant

Note: > 0.2 is a small effect, > 0.5 is medium and > 0.8 is large

Teacher Reported SDQ

A series of one sample t-tests revealed that teachers, similarly to the pupils and parents, reported the group to have significantly more behaviour, emotional and social difficulties, as

measured by the TD score of the SDQ than the normative sample [$t(185) = 9.008, p < .001$; Cohen's $d = 0.70$]. The teachers reported the pupils to have significantly more difficulties in all the subcomponents of the SDQ, including the prosocial subscale. These data are reported in Table 7.6.

Table 7.6: Responses on SDQ – Teacher report

SDQ responses	Mean (SD)	Goodman's normative sample Mean (SD)	T value	Cohen's d
Total Difficulties N = 186	10.95 (7.0)	6.3 (6.1)	9.01***	0.70
Emotional Symptoms N = 221	2.10 (2.2)	1.3 (1.9)	5.21***	0.38
Conduct Problems N = 211	1.94 (2.2)	0.9 (1.7)	6.77***	0.52
Hyperactivity N = 229	4.75 (3.0)	2.6 (2.7)	10.66***	0.75
Peer Problems N = 218	2.32 (2.1)	1.4 (1.8)	6.47***	0.47
Prosocial Subtest N = 206	5.84 (2.4)	7.1 (2.4)	- 7.44***	-0.52
Impact Score N = 226	.77 (1.3)	0.4 (1.0)	4.19***	0.31

*** $p < .001$

Note: > 0.2 is a small effect, > .0.5 is medium and > 0.8 is large

7.1.2.2. Agreement across student, parent and teacher raters on behaviour, emotional and social functioning

Where ratings were available from all three raters for the same pupils a series of mixed ANOVAs were computed. Results of these analyses are reported in Table 7.7. Significant differences were found in the total difficulties reported, and in the emotional, conduct and prosocial subscales but not hyperactivity, peer relations or impact (see Table 7.7). Pairwise comparisons with Bonferroni correction showed the t differences across the three groups of respondents for:

- Total Difficulties: Pupils reported significantly more total difficulties than their parents ($p = .012$) and teachers ($p = .001$). No significant differences were found between the parent and teachers' reports.
- Emotional Subscale: Pupils ($p = .001$) and parents ($p = .005$) reported significantly more difficulties with emotional functioning than the teachers. There were no significant differences between pupils and parents.
- Conduct Subscale: Pupils reported significantly more difficulties with conduct than both their parents ($p = .001$) and teachers ($p = .001$). There were no differences between teachers and parents.
- Prosocial Subscale: Teachers identified significantly less prosocial behaviours than both pupils ($p = .001$) and parents ($p = .001$). Parents report more prosocial behaviours than both teachers and pupils ($p = .001$).

Table 7.7: Comparisons in responses on the SDQ across the three raters

SDQ subscales	Student Mean (SD)	Parent Mean (SD)	Teacher Mean (SD)	F	Effect Size: Partial Eta Squared
Total Difficulties N = 115	14.12 (5.8)	12.19 (5.7)	11.05 (6.7)	10.398***	.084
Emotional Symptoms N = 142	3.68 (2.5)	3.13 (2.4)	2.29 (2.4)	15.404***	.098
Conduct Problems N = 139	3.29 (1.9)	2.15 (1.8)	1.79 (2.0)	31.229***	.185
Hyperactivity N = 146	4.86 (2.2)	4.91 (2.6)	4.86 (3.0)	.026 ^{NS}	-
Peer Problems N = 141	1.88 (1.8)	1.97 (1.7)	2.23 (2.0)	1.602 ^{NS}	-
Prosocial Subtest N = 133	7.57 (1.8)	8.68 (1.7)	6.06 (2.3)	70.408***	.348
Impact Score N = 137	.77 (1.4)	1.09 (1.6)	.82 (1.4)	2.206 ^{NS}	-

*** $p < .001$, NS = not significant

Note: > 0.1 is a small effect, $> .0.3$ is medium and $> .0.5$ is large³⁵

³⁵ These values differ from previous tables as a different measure of effect size (partial eta squared) is applicable; however, the descriptors of magnitude are equivalent for both effect size measures

7.1.2.3 Differences in performance on the SDQ as a function of non-verbal ability

In order to explore the relationship between non-verbal ability and BESD, the group were divided into those with average (non-verbal IQ = ≥ 85) and below average (non-verbal IQ < 85) performance IQ as measured by the WISC111. As shown in Table 7.8 independent *t*-tests showed no significant differences in total difficulties on the SDQ across all three raters. Pupils with lower performance IQ did not have greater levels of BESD than their peers with higher performance IQs.

Table 7.8: Differences in SDQ responses of pupils with average and below average performance IQ

SDQ – Total Difficulties (TD)	Pupils with average or above average performance IQ Mean (SD)	Pupils with below average performance IQ Mean (SD)	<i>t</i>	Cohen's <i>d</i> (Effect Size):
Student-completed	13.7 (5.7)	14.0 (5.7)	.46 ^{NS}	-
Parent-completed	11.6 (5.4)	12.4 (5.9)	1.01 ^{NS}	-
Teacher-completed	11.2 (7.1)	10.6 (6.9)	-.52 ^{NS}	-

NS = not significant

7.1.2.4 Differences in performance on the SDQ as a function of language ability

In order to explore the relationship between language ability and BESD, we looked at both expressive language ability, as measured by the combined scores of the recalling sentences and formulating sentences subtests of the CELF4, as well as receptive vocabulary, as measured by the BPVS. Separate analyses were undertaken with the group divided first into average and below average expressive language ability and second, average and below average receptive vocabulary. As is typically used in research to identify children with specific language difficulties 1.5 SD below the mean (that is -1.5 SD) was used to identify those pupils with significant language problems.

A similar pattern of results emerged when dividing the group according to expressive and receptive language ability. Pupils with low expressive language ability on the CELF4 reported having greater total difficulties on the SDQ than pupils with average language abilities. These differences were not found on the parent or teacher-reported SDQ (see Table 7.9). Similarly, pupils with low receptive vocabulary on the BPVS reported having greater total difficulties on the SDQ than pupils with average language abilities. Again, these

differences were not found on the parent or teacher-reported SDQ (see Table 7.10). Thus it is only with the student-reported SDQ where participants with lower receptive or expressive language are reported to have greater BESD than their peers with better language abilities. However in all cases the effect sizes are small.

Table 7.9: Differences in SDQ responses of pupils with average and below average expressive language ability (CELF4-FS+CELF-RS)

SDQ Total Difficulties (TD)	Pupils with average expressive language Mean (SD)	Pupils with below average expressive language Mean (SD)	<i>t</i>	Cohen's <i>d</i> (Effect Size):
Student-completed	13.3 (5.3)	14.8 (6.2)	2.22* *	- 0.25
Parent-completed	11.95 (5.4)	12.3 (6.2)	.53 ^{NS}	-
Teacher-completed	10.9 (6.9)	10.7 (7.3)	-.20 ^{NS}	-

** $p < .01$; NS = not significant

Note: > 0.2 is a small effect, > 0.5 is medium and > 0.8 is large

Table 7.10: Differences in SDQ responses of pupils with average and below average receptive vocabulary (BPVS)

SDQ Total Difficulties (TD)	Pupils with average receptive vocabulary Mean (SD)	Pupils with below average receptive vocabulary Mean (SD)	<i>t</i>	Cohen's <i>d</i> (Effect Size):
Student-completed	13.3 (5.4)	15.2 (6.1)	2.59**	- 0.32
Parent-completed	12.1 (5.7)	11.5 (5.3)	-.60	-
Teacher-completed	10.6 (7.1)	12.0 (6.8)	1.14	-

** $p < .01$, NS = not significant

Note: > 0.2 is a small effect, > 0.5 is medium and > 0.8 is large

7.1.2.5. Differences in performance on the SDQ as a function of educational attainment

Differences in BESD were also explored in relation to academic attainment, that is between pupils who scored average (4A-4C) and those scoring below average (< 3A) on an educational attainment test (English Key Stage 2 SAT). These data are reported in Table 7.11. Pupils scoring below average on this school test were found to have greater BESD than those scoring average on both the self- and teacher-reported SDQ. A similar pattern was evident for the parent-completed SDQ although this difference was not significant .

Table 7.11: Differences in SDQ responses of pupils with average and below average educational attainment

SDQ – Total Difficulties (TD)	Pupils with average educational Performance Mean (SD)	Pupils with below average educational performance Mean (SD)	<i>t</i>	Cohen's <i>d</i> (Effect Size):
Student-completed	12.3 (4.6)	14.7 (6.1)	4.041***	- 0.44
Parent-completed	11.3 (5.2)	12.6 (6.0)	1.653 ^{NS}	-
Teacher-completed	9.0 (6.2)	12.2 (7.2)	3.043***	- 0.46

*** $p < .001$, NS = not significant

Note: > 0.2 is a small effect, > 0.5 is medium and > 0.8 is large

7.1.2.6. Differences in performance on the SDQ as a function of gender

Gender differences were examined and these data are reported in Table 7.12. No differences were found across the three raters.

Table 7.12: Differences in SDQ responses of male versus female pupils

SDQ – Total Difficulties (TD)	Male Mean (SD)	Female Mean (SD)	<i>t</i>
Student-completed	13.4 (5.4)	14.6 (6.2)	-1.819
Parent-completed	12.1 (5.6)	11.98 (5.9)	.204
Teacher-completed	11.5 (7.0)	9.9 (7.0)	1.512

Note: All *t*-scores non-significant

7.1.2.7 Differences in performance on the SDQ as a function of socio-economic status (maternal educational level)

One way ANOVAs were used to explore any differences in SDQ total difficulties in pupils whose mothers' educational levels were at university level, college level, or had no formal qualifications. Significant differences were found on the self [$F(2; 262) = 3.499, p = .032$] and teacher-reported [$F(2; 154) = 3.613, p = .029$] SDQ. Post hoc comparisons revealed that on both the student- and teacher-rated questionnaire, pupils whose mothers had no qualifications showed greater BESD than those who had college qualifications ($p = .022$ and $p = .026$ respectively) as well as compared with those who had university qualifications ($p = .006$ and $p = .019$ respectively). There were no significant differences found on the parent-reported SDQ [$F(2; 193) = 2.309, p = .102$] (see Table 7.13).

Table 7.13: Differences in SDQ responses of pupils whose mothers differed in levels of education

SDQ – Total Difficulties (TD)	Pupils with mothers with no qualifications Mean (SD)	Pupils with mothers with college education Mean SD)	Pupils with mothers with university qualifications Mean (SD)	F
Student-completed	15.6 (5.0)	13.3 (6.1)	12.6 (4.5)	2.262*
Parent-completed	14.0 (6.0)	11.8 (5.4)	11.2 (7.2)	2.309 ^{NS}
Teacher-completed	13.3 (7.1)	10.2 (6.6)	8.7 (6.0)	3.613*

* $p < .05$, NS = not significant

7.1.2.8 Relationship between SDQ and non-verbal performance, language ability and educational attainment

Two-tailed Pearson correlations were used to explore the relationship between the SDQ total difficulties score of the student-, parent- and teacher-reported SDQ and performance IQ (WISC111), educational attainment (scores on the national English test) and receptive (BPVS) and expressive language ability. Two measures of expressive language ability were used in the correlational matrix, the average combined score of the CELF-FS and CELF-RS and the average combined score of the three expressive TOWK subtests (TOWK-EV, TOWK-MC and TOWK-FU). After correcting for multiple correlations (Bonferonni) the only correlations which were significant, of the 15 computed, were between the student-reported

SDQ and educational attainment ($p = .001$) and between the student-reported SDQ and receptive vocabulary as measured by the BPVS ($p = .002$).

7.1.3 Conclusions and Implications

The results of this study show that pupils with moderate SLCN have greater BESD than a normative sample as reported by themselves, their parents and teachers. These reported BESD were found in a non clinical sample of year 7 pupils in mainstream secondary schools who were not receiving any speech and language therapy support. However, it is important to note that apart from the teacher rating of prosocial behaviour none of the scores fell into the clinical range of the 10 per cent scoring in the highest 10% abnormal range (Goodman et al., 2000) and teacher ratings of prosocial behaviour was in the borderline range. Despite this however, the difficulties experienced by the pupils were significant enough for all raters to report these difficulties as having a significant impact on the young people's lives.

Differences were found across the three raters with pupils identifying greater BESD than their teachers and parents. Pupils and their parents identified more difficulties with emotional functioning than teachers, and pupils identified more problems with conduct than both their parents and teachers. Parents reported more prosocial behaviours than both pupils and teachers with teachers reporting the least amount of prosocial behaviour. These significant differences, found across the three raters, could be explained by differences in the way the pupils behave in different settings (for example school versus home) or by differences in the perceptions and experiences of the raters (for example, different expectations of parents and teachers).

The finding that pupils reported the greatest number of BESD may reflect a greater awareness of and sensitivity to their own behaviour, how they relate to others, and their social and emotional functioning.

The finding that pupils, parents and teachers all pointed to the fact that the pupils' difficulties were having a significant impact on their daily lives is an indicator that these pupils require additional support. The differences across the three raters emphasise the importance of obtaining information from multiple sources in order to get a more complete and coherent picture of a child's behaviour, social and emotional functioning.

There were no significant differences in student, parent or teacher-rated SDQ (overall total difficulties score) between pupils with average versus below average performance IQ and

between male versus female pupils. Differences were found between pupils whose mothers had no formal education and those with a college education and university education, and these differences were evident on the self- and teacher rated questionnaire. Participants with mothers with lower levels of education were at greater risk for experiencing higher levels of BESD as indicated by the SDQ.

Many studies have shown that coming from a lower SES background is associated with increased levels of behaviour problems. Data from the BCRP (Vignoles et al has shown that lower levels of SES are associated with increased levels of SLCN. The relationships between language and communication, disadvantage and BESD needs to be considered more systematically to identify causal relationships.

A difference was also found in behaviour, emotional and social functioning (BESD) in pupils with average versus below average expressive language and receptive vocabulary. In separate analyses, pupils with average expressive language and those with average receptive vocabulary reported less total difficulties than pupils with below average expressive language and receptive vocabulary. These differences were not found with the parent or teacher-rated SDQ.

Overall there were few significant relationships between the ratings on the SDQ and other measures. There were no significant correlations found between BESD and performance IQ. The only language correlations to remain significant after Bonferroni correction were those between the student-reported SDQ and the BPVS. In general associations between BESD and language were weak or non-significant. The strongest difference in BESD was evident between pupils scoring average or below average on an English educational attainment test with pupils scoring below average showing a greater number of BESDs than those scoring in the average range on both the student and teacher-rated SDQ.

These results suggest that level of academic attainment may be more important in increased levels of BESD than structural measures of language or non-verbal ability. Other studies, where associations between language and BESD have been reported also have found weak relationships with language apart from measures of receptive language with emotional functioning (Conti-Ramsden and Botting, 2008) and with friendships (Durkin and Conti-Ramsden, 2007). The importance of receptive language is also relevant in these data as the most robust association with BESD in this study was the BPVS, a measure of receptive vocabulary. This may indicate that pupils with problems in understanding language may be

particularly vulnerable to experiencing BESD but these need to be investigated further with the necessary controls for academic attainments and SES included.

7.2 BESD and language difficulties in a clinical sample

Study 2 reports parent completed SDQ data from a sample of young people derived from an existing study of language and genetics. Participants were all patients at a specialist tertiary paediatric centre and diagnosed with SLI, ASD or ASD with a language impairment: the clinic sample in the current study. For comparative purposes data were also available from their unaffected siblings providing within family comparison data.

7.2.1 The participants

Eighty seven families (252 children) where one or more children, aged between 6 and 16 years 11 months, had language impairment (LI) as defined below were recruited for a study of genetic factors involved in LI. Families were recruited through local clinicians, specialist language schools and by advertising through the Association for All Speech Impaired Children (Afasic). Ethical approval was granted for the study by the Guy's Research Ethics Committee and informed consent given by parents and, where appropriate, children. Children were screened with the parent completed Social Communication Questionnaire (SCQ). Information from local assessments was obtained. Blood tests for karyotype (number and appearance of chromosomes) were carried out to exclude all children with known genetic disorders.

Children were excluded from SLI status if they had a karyotype abnormality; active epilepsy; an adverse obstetric/postnatal history e.g. neonatal encephalopathy; sensory neural hearing loss; autism; partial or complete visual loss; any structural lesion contributing to speech difficulty; performance IQ < 80; English was not the family language; or they were in care. A diagnosis of autism spectrum disorder (ASD) was assigned on the basis of previous multidisciplinary assessment, SCQ score, family history interview (FHI) and clinical assessment by clinicians.

7.2.2 Assessments

The following assessments were carried out on all eligible children (see assessments section of Baird *et al.* for references for specific tests):

- Clinical Evaluation of Language Fundamentals (CELF) 3rd Edition UK or Pre-school CELF UK.
- Edinburgh Articulation Test (EAT).
- Wechsler Intelligence Scale for Children-III (WISC-III) including the digit span subtest. The latter is a composite of forwards and backwards digit recall.
- Wechsler Objective Reading Dimensions (WORD^{UK}) provides measures of reading decoding (basic (word) reading), reading comprehension, and spelling.
- Children's Non-Word Repetition test (CNRep) scored as correct or not correct.
- SCQ Social Communication Questionnaire

For the principal analysis, LI was defined categorically and children classified into three groups on the basis of a current (C-LI) or past (P-LI) language problem, or never having had a language problem (N-LI). C-LI was defined as a score >1.5 standard deviations (SD) below the mean for the child's chronological age on CELF expressive, receptive or total score, and a performance IQ (PIQ) on the WISC/WPPSI >80 . P-LI was defined as a current CELF receptive and/or expressive or total scores and PIQ ≥ 80 but language milestone delay in single words (>24 months) and/or phrases (>33 months), evidence of previous LI as defined above and/or a problem with articulation at 5 years such that the child was unintelligible to most people. All children in P-LI and C-LI groups had been referred to speech and language therapy (SLT). N-LI was defined on the basis of no history of language delay or unintelligibility, no current language impairment and PIQ >80 . Every family included in the study had one or more children with either a C-LI or P-LI and a sibling from any classification group.

A dimensional measure of language impairment was also calculated using the difference between PIQ and the total CELF score. Both the CELF and WISC have a mean of 100 and standard deviation of 15; a score of 0 indicates no discrepancy; a positive score indicates better PIQ than language and *vice versa*. Because the categorical definition of LI is arbitrary and language development is influenced by general ability, we sought to use an approach that allowed us to consider language impairment discrepant from IQ as a continuous variable, which potentially has more power.

7.2.3 *BESD measure and participant profiles*

Parents completed the Strengths and Difficulties Questionnaire for a subgroup of children attending the hospital (clinic sample) (N= 52) and their siblings (N =90). This report contains the analysis of the SDQ data for the selected clinic sample and their siblings.

Psychometric assessments considered for the analyses included standard scores on receptive, expressive and total language score on the CELF, performance IQ, reading decoding and comprehension, spelling , WOND reasoning and numerical .

All the clinic sample experienced language and/ or communication difficulties. In addition significant numbers of siblings experienced problems language or communication difficulties. Participants in the full sample were therefore assigned to one of four groups based on psychometric assessments and clinical diagnosis for autism: unaffected sibs, specific language impairment (SLI), autism spectrum disorder (ASD), or autism spectrum disorder and language impairment (ASD+LI). Overall both the ASD group and the unimpaired siblings performed within the average range and did not differ significantly from each other on the standardised measures, In contrast both the SLI and the ASD + LI group performed poorly on the standardised measures and, typically significantly lower than both the unaffected sibs and the ASD group. Clinical data on ASD status were also available

7.2.4 *Sample characteristics*

Parent SDQ data were available for 142 participants (92 males and 50 females), of these 50 children had been identified as the clinic sample and 92 as siblings. Clinic sample children with and without SDQ data were compared on all psychometric measures. There were no significant differences between the groups on age, expressive language, word reading, spelling, numerical operations and reasoning. Participants with completed SDQ questionnaires scored significantly lower on assessments reflecting receptive language, reading comprehension, IQ and numerical operations.

Comparisons were also made across a range of relevant categorical variables. Participants with SDQ questionnaires did not differ from those without questionnaires on evidence of presence of autism or Pervasive Developmental Disorder (PDD) ($X^2(1, n = 78) = .313, ns$), gender ($X^2(1, n = 78) = .997, ns$) or language delay at 34 months ($X^2(1, n = 78, = .012)$).

Clinic sample children and sibs with a clinical diagnosis of ASD were identified and language was examined for evidence of language impairment. Participants with SDQ scores included the original clinic sample children ($n = 50$) and their siblings ($n = 92$). Some of the clinic sample children were diagnosed with autism and some sibs were diagnosed with language impairments or autism. For subsequent analyses, therefore, the full sample of 142 children was divided into four groups: Unaffected siblings ($n = 53$), children with a diagnosis of specific language impairment ($n = 49$), children with a diagnosis of autism ($n = 18$) and children with language impairments and autism ($n = 22$). The means (SDs) of all measures is presented in Table 7.14.

Table 7.14 Means and standard deviations for the four groups on the standardised language, literacy and ability measures.

Group	Unaffected sibs		SLI		ASD		ASD+LI		Post hoc (significant)
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Receptive Language	99.7	10.1	72.6	10.6	97.2	13.1	65.8	11.4	F (3,131) = 78.531***
Expressive Language	90.8	11.2	64.5	9.8	90.3	11.7	64.0	9.9	F (3,131) = 68.379***
Total Language	94.8	9.9	67.0	9.1	93.5	10.8	63.7	9.4	F (3,131) = 96.379***
Performance IQ	105.8	14.4	94.6	15.4	102.3	10.2	92.7	22.0	F (3,128) = 5.287**
Word Basic Reading	95.7	13.4	82.5	14.0	95.3	11.1	77.6	12.7	F (3,111) = 12.230***
Spelling	98.7	13.9	81.9	14.3	98.6	13.9	78.8	13.6	F (3,111) = 15.441***
Reading comprehension	89.8	11.8	76.1	12.3	88.2	11.6	73.2	11.8	F (3,103) = 12.752***
WOND Reasoning	102.2	13.0	86.4	11.3	85.6	12.7	78.9	7.2	F (3,106) = 21.831***
WOND numerical operations	100.8	13.8	86.7	11.2	93.8	16.0	81.6	8.4	F (3,107) = 13.221***

*** $p < .001$, ** $p < .01$

The groups differed on all the psychometric measures. These differences were highly significant ($p < .0005$) in all cases except performance IQ where $p = .002$. Bonferroni post

hoc comparisons revealed that in all cases the unaffected sib and the ASD groups did not differ (all p 's > .05). In contrast the SLI group performed significantly lower on all language and literacy measures than the unaffected siblings and the ASD group (all p 's < .007), but only the unaffected sibs for performance IQ, WOND reasoning and WOND numerical operations. The SLI group did not differ significantly on any language, literacy or reasoning measure from the ASD+LI group.

The ASD + LI differed from their unaffected sibs and the ASD group on all language measures (all p 's < .0005) literacy measures (all p 's < .002), WOND reasoning (p 's < .0005) and WOND numerical (Unimpaired sibs p < .0005, ASD p = .041) but for performance IQ the ASD+LI group differed only from unimpaired sibs (p = .01).

Overall both the ASD group and the unimpaired siblings performed within the average range and did not differ significantly from each other on the standardised measures, In contrast both the ASD and the ASD+LI group performed poorly on the standardised measures and, typically significantly lower than both the unaffected sibs and the ASD group.

7.2.5 Strengths and Difficulties questionnaire

7.2.5.1 Scores

Table 7.15 presents the means and standard deviations of the four groups on the SDQ with age related normative comparisons accessed from the SDQ website (<http://www.sdqinfo.org>). Comparisons were made between the population's means and the scores for the unaffected sibs. There were no significant differences on the total score and the scales for emotional symptoms, conduct problems, hyperactivity, and prosocial (all t 's < 1.0). However unaffected sibs had significantly higher scores on the peer problems scale (t = -3.349, df = 53, p = .001) indicating greater levels of difficulties in this area.

The four groups differed significantly on all scales except conduct problems: Conduct problems [$F(3, 142) = .472$, ns], Emotional symptoms [$F(3, 142) = 4.426$, $p = .005$, partial eta squared = .09], Hyperactivity [$F(3, 142) = 3.078$, $p = 0.03$, partial eta squared = .06], Peer problems [$F(3, 142) = 10.665$, $p < .0005$, partial eta squared = .19], Prosocial scale [$F(3, 142) = 5.772$, $p = 0.001$, partial eta squared = .11], Total difficulties [$F(3, 142) = 8.444$, $p < .0005$, partial eta squared = .16].

Bonferroni post hoc comparisons revealed two patterns of differences between the groups. The first pattern was evident for the total SDQ, emotional difficulties and the prosocial scale.

The mean scores for the ASD group were significantly different from that of the unaffected sibs (p 's < .001) and the SLI group (p 's < .03), indicating greater problems but the ASD+LI group did not differ significantly from any group. In the second pattern, unaffected sibs and the SLI groups did not differ significantly from each other and both groups scored significantly lower, indicating fewer difficulties than the ASD group for hyperactivity and peer problems score (p 's < .01 for hyperactivity p 's < .0005 for peer problems) and the ASD+LI group (p = .03 hyperactivity, p = .003 peer problems).

Table 7.15 Strengths and Difficulties scales Means (*standard deviations*)

SDQ Scale		Norms	Unaffected sibs	SLI	ASD	ASD+LI
Emotional symptoms	M	1.9	1.8	2.5	3.7	2.7
	SD	2	1.7	2.2	2.2	2.1
Conduct problems	M	1.6	1.4	1.5	1.6	1.9
	SD	1.7	1.6	1.5	1.3	1.7
Hyperactivity	M	3.5	3.4	4.2	4.9	4.6
	SD	2.6	2.1	2.2	2.5	1.9
Peer Problems=	M	1.5	2.5	2.7	5	4.6
	SD	1.7	2.1	2	2.5	1.7
Prosocial scale	M	8.6	8.5	8.2	6.4	7.5
	SD	1.6	1.9	1.6	3.2	1.8
Total difficulties	M	8.4	9.1	10.8	15.2	13.7
	SD	5.8	5.4	5.3	4.6	4.5

There was also a significant difference between the groups on Impact ($F(3, 137) = 5.831, p = 0.001$, partial eta squared = .12). Bonferroni comparisons indicated that the ASD+LI group differed significantly from both the unaffected sibs ($p < .0005$) and the SLI group ($p = .007$) but not the ASD group. The ASD group were reported to experience the greater levels of difficulties from the unaffected sibs ($p = .04$) but not the other two groups.

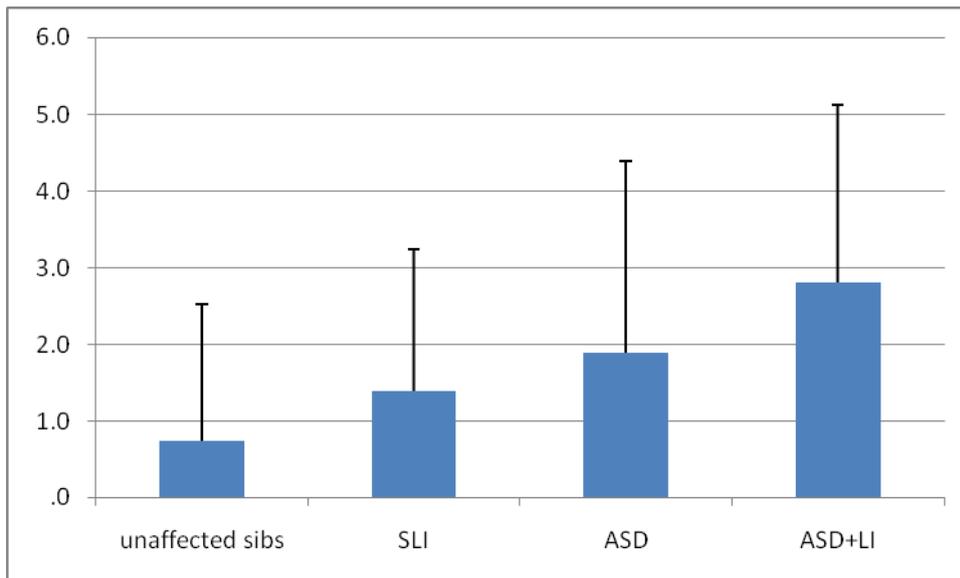


Figure 7.1 Means and standard deviations for impact

7.2.5.2 Risk categories

Participants' scores were classified into three risk categories as recommended by Goodman: 80 % normal, 10% borderline, 10% abnormal. As Table 7.16 shows for all subscales, the ASD group had a higher proportion of participants in the abnormal category. There were no significant differences in the distributions for the prosocial ($X^2 = 11.332$, $df = 6$, ns), conduct problems ($X^2 = 4.870$, $df = 6$, ns) and hyperactivity scales ($X^2 = 7.056$, $df = 6$, ns). In contrast there were significant differences for the distributions in both peer difficulties ($X^2 = 22.332$, $df = 6$, $p = .001$) and emotional difficulties ($X^2 = 16.481$, $df = 6$, $p = .01$), where both the ASD and ASD+LI groups had high numbers of cases in the abnormal category.

Table 7.16 Percentage of cases in SDQ risk categories by subscale

Scales		Unaffected sibs	SLI	ASD	ASD+LI
Prosocial	Normal	94.3	95.9	72.2	86.4
	Borderline	1.9	2.0	5.6	4.5
	Abnormal	3.8	2.0	22.2	9.1
Peer difficulties	Normal	52.8	46.9	11.1	18.2
	Borderline	9.4	18.4	5.6	9.1
	Abnormal	37.7	34.7	83.3	72.7
Conduct problems	Normal	81.1	79.6	72.2	63.6
	Borderline	11.3	10.2	22.2	18.2
	Abnormal	7.5	10.2	5.6	18.2
Emotional symptoms	Normal	79.2	79.6	50.0	54.5
	Borderline	11.3	2.0	11.1	22.7
	Abnormal	9.4	18.4	38.9	22.7
Hyperactivity	Normal	86.8	77.6	66.7	81.8
	Borderline	7.5	4.1	5.6	4.5
	Abnormal	5.7	18.4	27.8	13.6

As shown in Figure 7.2 the groups also differed in the risk categories assigned for the total SDQ ($\chi^2 = 18.509, df = 6, p = .005$) with both the ASD and the ASD+LI group showing greater numbers of cases in the abnormal category.

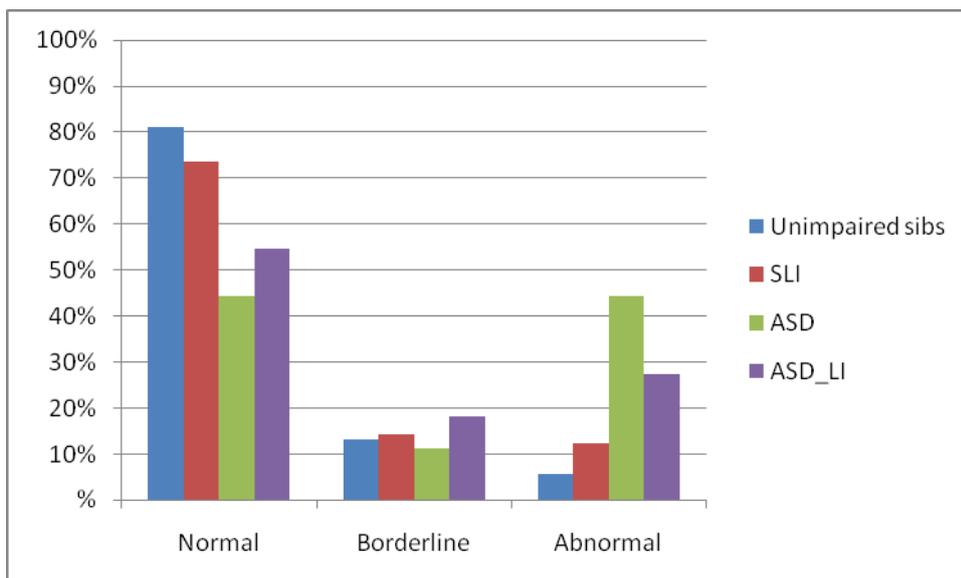


Figure 2 Risk categories for the four groups for total SDQ score

7.2.5.3 SDQ, language, attainments and ability

The relationships of both the SDQ total score and impact score with language, ability and attainment measures were examined. A regression analysis examined the added variance to the impact score after controlling for participants' SDQ scores.

Correlations

Correlations are presented in Table 7.16. A Bonferroni correction of .005 was used. The SDQ total difficulties score and the SDQ impact score were highly positively correlated. As expected there were also large and significant positive correlations between the standardised measures. There were, however, no significant correlations between the SDQ total score and any of the standardised measures. In contrast the SDQ impact scale was significantly negatively correlated with all language and attainment scores apart from WOND reasoning.

Table 7.16 Correlations between SDQ total score, SDQ impact and psychometric measures

	1	2	3	4	5	6	7	8	9	10
1.SDQ impact										
2.SDQ Total difficulties	.477**									
3. Receptive Language	-.369**	-.211								
4.Expressive Language	-.254*	-.187	.826**							
5. Total Language	-.307**	-.209	.954**	.952**						
6.PIQ	-.259*	-.172	.454**	.435**	.455**					
7. Word Basic Reading	-.336**	-.203	.621**	.631**	.656**	.427**				
8.Spelling	-.288*	-.175	.671**	.644**	.684**	.446**	.879**			
9. Reading comprehension	-.313*	-.139	.617**	.609**	.633**	.403**	.730**	.662**		
10. WOND Reasoning	-.117	-.009	.189	.110	.154	.071	.723**	.735**	.561**	
11. WOND numerical operations	-.294*	-.263	.635**	.627**	.662**	.494**	.694**	.695**	.584**	.106

$p < .05$, ** $p < .01$, *** $p < .001$

7.2.6 Regression analyses

Step wise regression analyses were computed to examine the variance to be accounted for in the SDQ impact score by non-verbal and language ability. The SDQ total score was included first in the model. Given the significant relationships between diagnostic category and SDQ, diagnostic category was included in the model, followed by performance IQ (non-verbal ability) and receptive language (language measure with the highest correlation with impact). A significant model included SDQ total and receptive language. Receptive language entered as the last step resulted in an R^2 change of .03. As Table 7.18 shows neither non-verbal ability nor diagnostic category was significant in the model ($F(4, 122) = 13.996$, $p < .0005$, $Adj R^2 = .30$).

Table 7.18 Regression table for SDQ impact score

Model	Variable	B	Beta	t
1	SDQ Total difficulties	.158	.467	5.805 ^{***}
2	SDQ Total difficulties	.129	.381	4.620 ^{***}
	Diagnostic category	.445	.255	3.090 ^{**}
3	SDQ Total difficulties	.125	.369	4.506 ^{***}
	Diagnostic category	.397	.228	2.742 ^{**}
	Performance IQ	-.016	-.144	-1.824
4	SDQ Total difficulties	.124	.366	4.537 ^{***}
	Diagnostic category	.238	.136	1.476
	Performance IQ	-.008	-.071	-0.834
	Receptive Language Score	-.021	-.209	-2.150 [*]

$p < .05$, $** p < .01$, $*** p < .001$

7.2.6 Conclusions

Two patterns of difference were evident between the four groups on the SDQ subscales, total score and impact. In pattern 1 the ASD group had significantly worse scores than the unaffected sibs and the SLI group and in pattern 2 both the ASD and ASD+LI group had significantly worse scores than the unaffected sibs and SLI groups. Overall ASD was the key differential factor in poor scores on the SDQ. Risk categories were also computed and in all cases the ASD and the ASD+LI group had greater numbers of cases in the abnormal category.

Correlations between the SDQ total difficulties and impact scores with the psychometric measures revealed no significant association between the SDQ total score and any of the psychometric measures. In contrast there were large and significant correlations between the psychometric measures and impact.

Using SDQ impact as the dependent variable and SDQ total score as the autoregressor showed additional added variance was accounted for only by receptive language.

7.3 Overall Summary:

These two studies, using different identification techniques and sample characteristics, point to a number of ways to further our understanding about the relationships between BESD and language in older pupils. Both cohorts focussed on participants experiencing language difficulties and both studies show increased levels of BESD in the participants. However, neither study finds language levels to be a major correlate with behaviour problems. Since the level of language severity varies across the studies, with participants in Study 1, in general, experiencing milder levels of structural language problems than those in Study 2, together the results suggest that problems with structural language at this point in development do not impact on reported levels of BESD.

In contrast academic attainment was important in both studies. Study 1 identified the importance of academic attainments and their relation to impact of behavioural difficulties and the large and significant negative correlation in Study 2 between impact and word reading would support this conclusion. There is a need to examine further the relationship between BESD and educational attainment, controlling for SES and ASD, to identify the ways in which educational attainment impacts on BESD in secondary school-aged pupils. Such analyses are important as this will allow practitioners to identify appropriate support mechanisms and interventions for the relevant risk populations.

A major and important difference between the two studies is the level of BESD reported. In Study 1, the at risk population cohort, identified raised levels of problems but these problems do not enter the clinical range of those scoring in the highest 10% abnormal range (Goodman et al., 2000). In marked contrast in Study 2, the clinical cohort had, peer difficulties, emotional difficulties and hyperactivity significant numbers of participants in the 10% clinical range; this was true for participants with SLI, ASD and ASD+LI alike. It is important to note also that, in Study 2, both ASD and ASD+LI status presented a significant risk factor particularly in the area of peer problems, with 83% and 73% respectively falling in the abnormal range.

Study 2 showed that significantly greater problems were reported for participants with ASD rather than those with language impairment and highlighted the importance of impact as opposed to actual levels of BESD. The increased level for participants with ASD suggests that the dimensions of language related to social communication and language understanding are central to increased levels of BESD. Given that populations with language difficulties and ASD may overlap on these dimensions (see Section 5, the prospective study)

it becomes increasingly important to consider performance in these areas. Together these studies highlight the need to consider both social communication and academic performance as important factors in increased levels of BESD. Moreover, they suggest that interventions designed to reduce levels of BESD in populations of pupils with SLCN should focus, not on structural dimensions of language, but on social interaction and communication. Given the reports of the high level of impact of BESD in Study 1 interventions should not be restricted to clinical populations alone.

The fact that different respondents report different levels of BESD in the same child is not new and to be expected given the different contexts in which children and young people function (Lindsay, Dockrell & Strand, 2007). Study 1 is unique in also including self reports of large numbers of pupils with SLCN and highlights the young people's own concerns in this area. Importantly no differences between raters on the impact score were evident suggesting that despite differences in reported levels of problems across contexts the difficulties were affecting functioning. Impact was also the scale that related to language and literacy measures in Study 2. Examining the features of the impact scale and the ways in which these features are specific to language and communication requires further examination.

There has been increasing concern about levels of BESD in children experiencing SLCN. These two studies demonstrate that there is no simple correlation between these two dimensions in school age pupils. Rather they highlight the complex interplay between social communication, SES and academic performance and levels of behaviour emotional and social difficulties.

8. PREFERRED OUTCOMES: ONLINE SURVEY OF PARENTS' VIEWS

Sue Roulstone and Helen Hambly

8.1 Aims of the study

The overall aim of the 'preferred outcomes' project is to improve the mechanisms for evaluating outcomes so that they take account of outcomes valued by children and young people with speech, language and communication impairment and their families. In the first interim report, we reported on the qualitative investigation of the perspectives of children and their parents. This study is a quantitative component which sought views from a wider range of parents. The specific objectives were to:

- (i) investigate hierarchy in outcomes that parents value for their children with SLCN
- (ii) explore differences in parents' priorities depending on the nature of their child's difficulties.
- (iii) explore appropriate timescales for setting goals

8.2 What we have done

Findings from the parent focus groups informed the development of an online questionnaire. Links to the questionnaire were then distributed by national and local support groups and contacts in special schools via email; details of the survey were also posted on the programme website, with links from the websites of national and local parent groups and third sector organisations.

Parents were asked to indicate the age of their child and the nature of their child's impairment. They were then asked to rate on a scale of 1 to 5 the importance of various outcomes that had been identified by parents in the focus groups. Parents were also asked about their children's next steps and the timescales they find useful for goal setting with their children.

Descriptive data are provided on the frequency of parents' priorities, the relative priority that they give to different areas of their children's lives. Differences between parents who had children with different impairments were explored using inferential statistical methods. Text responses from parents about the next goals for their children were coded and/or summarised thematically.

8.3 What we have found

8.3.1 Participants

Ninety parents completed the survey. Respondents' children ranged between 4 months and 18;11 years, mean age 10;4 years. 27.8% were girls and 72.2% were boys. Parents described their children as having a variety of SLCN with the majority of children having more than one difficulty or diagnosis. Most common SLCN included autism spectrum disorder (ASD, 57%), learning difficulties (44%), expressive difficulties (40%).

Parents' children were educated in a variety of ways (see Table 6.1).

Table 8.1 Type of school attendance by parents' children

	% of sample
Special Schools	34.8
Mainstream	33.7
ASD Resource base	10.1
Home Educated	10.1
Language Resource Base	5.6
Pre-school	5.6

8.3.2 Parents' priorities

Parents most frequently rated independence, staying safe and improving communication as important or very important outcomes for their children. In contrast, only 34% of parents rated academic achievements as important or very important (see Figure 6.1).

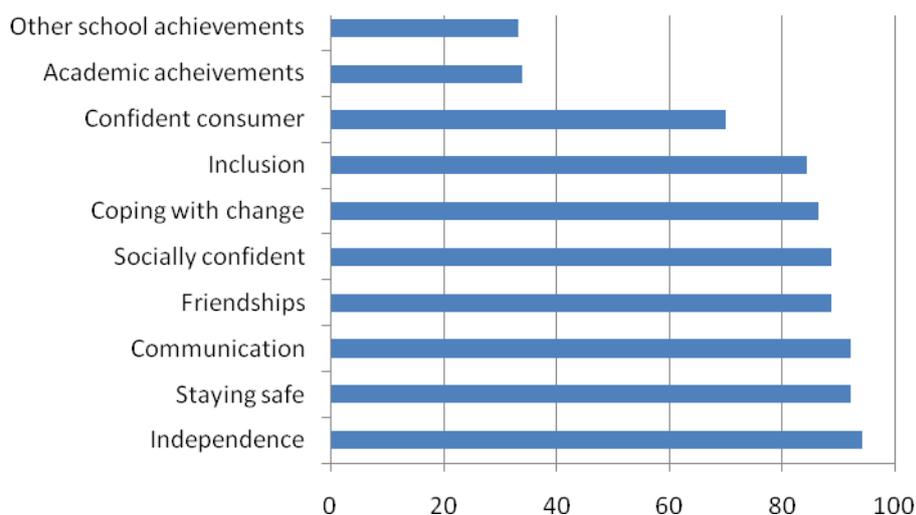


Figure 8.1: Percentage of parents rating as important or very important

Some differences were found between parents in their priorities for their child which were associated with their child’s difficulties. For example “**Coping with change**” was rated as important more frequently by parents of children with ASD ($F(1,88) = 5.58, p = 0.02$) than for other groups. “**Academic achievements**” were rated as important less frequently by parents of children with learning difficulties ($F(1,88) = 7.56, p < 0.01$) than for other groups. There were no impairment specific differences in parents’ importance ratings for **independence, inclusion and other school achievements**. There were no significant differences between parents in their priority ratings that were related to the age or sex of their child.

8.3.3 Parent’s views on ‘next steps’ for their children

Parents were asked about the next three steps that they wished for their child to achieve. These were coded and counted. A quarter (23.3%) did not answer the question, but from the remaining respondents across **all ‘next steps’** the most frequent goals were related to *socialising with others*, mentioned by 37.8% of 90 parents; general *communication* of needs or thoughts (27.8%); specific *speech* related goals (26.7%) and *independence* (24.4%). Other frequent goals included dealing with *emotions*, such as coping, self esteem and being happy (14.4%) and developing *confidence* in various areas, including speaking, socialising and life skills (12.2%). A number of other next steps were mentioned, such as transition from one school to another or from school to employment, getting help from speech and language therapists, achieving something that their child wished to achieve, being more aware of others needs and wants, understanding money and getting a boy or girl friend.

8.4 Conclusions

Independence and inclusion were valued as important outcomes for their children by the majority of parents, irrespective of the nature of their child's difficulties. Staying safe, communication skills, friendships and social confidence were also very important outcomes for their children according to most parents. Whilst communication skills are routinely evaluated within intervention studies and services, independence, inclusion, staying safe, friendships and social confidence are not. Conversely, academic achievements are often evaluated, but these were relatively less important to parents than other outcomes. The sample of parents included a relatively high number of parents with children with ASD and complex needs. Therefore there may be more emphasis on aspirations of parents for socialising with others and independence within this sample – it is difficult to know how representative it is of children with SLCN in general. Nonetheless, when responses were explored between parents of children of different ages and with different diagnoses, there were no differences in their relative ratings of independence and inclusion suggesting that positive outcomes in these aspects of their children's lives are valued by most parents irrespective of the nature of their child's difficulties. Interventions and evaluation frameworks should take into consideration these more functional outcomes that are valued by parents.

9. ECONOMIC EFFECTIVENESS PROGRAMME

Jennifer Beecham, James Law and Dr Biao Zeng

9.1 Aims of the project

The overarching aim of this work stream of the Better Communication Research Programme (BCRP) was to extend the use of health and social care economics theory and methods in SLCN research so research findings could better inform commissioners and providers. This aim was broken down into two broad objectives:

- To ensure that a baseline of information on methods and approaches is in place to inform future cost and cost-effectiveness evaluations of SLCN interventions.
- To provide some early indications of the associations between costs, inputs and outputs, including exploring the potential of national datasets.

Building on the previous two objectives, a third was:-

- To help ensure that studies commissioned or undertaken within the Better Communications Programme would be designed and implemented in such a way that facilitated good quality cost and cost-effectiveness evaluations.

9.2 What we have done

The team has developed four strands of work feeding into the objectives listed above. Each plays a part in improving the availability of information and in improving knowledge about the way SLCN health and social care resources are used at both the macro- (national) and micro- (intervention/user) levels. Although relatively discrete at present, these findings will be further integrated into other elements of the Better Communication Research Programme as they come together.

9.3 What we have found

9.3.1 Project 1

A comparison of service provision and social disadvantage for children with SLCN across health and education sectors

Much of the work within this aspect of the BCRP has focused on the micro-level but we have also undertaken to try to pull together routinely-collected national level data from both education and health systems to look at the extent to which reported rates of SLCN vary across the country and the extent to which they can be predicted by socio-economic indicators. For many years one of the outstanding issues associated with SLCN is the funding for speech and language therapy services. These are commonly funded through the NHS but are delivered to many children through local authorities and specifically schools. The education data have been explored in detail in Section 3 but the issue of how many children are identified in the two services has never previously been addressed.

Our study combined educational data and NHS data accessed through the relevant open access websites^{36,37}. These data are reported at the local authority level, the level at which it is possible to read across from the different database. The former include the number of pupils and the number of those with SLCN in primary and secondary schools across England on school action plus or with statements of educational need³⁸. This analysis draws upon essentially the same dataset as that used by Meschi, Micklewright and Vignoles (Section 3) but the data are aggregated to LA level, as stated above. It is both narrower in its application in the sense that it takes a much more restricted set of variables and broader in the sense that it links the educational data across to NHS datasets, something that has yet to be achieved in this field. The NHS source, by contrast, provides data on the number of initial speech and language therapy contacts, the number of speech and language therapists in post in a given authority and the amount of spend per child. Although it is possible to obtain data on the age range of the new contacts it was not possible to obtain information from NHS sources for example on SLTs working specifically with children or on the spend

³⁶ Department of Education. (2011). *Table 23: State-funded primary schools: Number and percentage of pupils with statements of special educational needs (SEN) or at School Action Plus by type of need, by local authority area and region, England, January 2011.*

³⁷ NHS Information Centre. (2005,2007,2009).

³⁸ <http://www.education.gov.uk/rsgateway/DB/SFR/s001007/index.shtml> (accessed July,2011)

Department of Education. (2011). *Table 9a: State-Funded Primary schools: Number of pupils by age as at 31 August 2010, by Local Authority Area and region.*

Department of Education. (2011). *Table 9b: State-Funded Secondary schools: Number of pupils by age as at 31 August 2010, by Local Authority Area and region.*

<http://www.education.gov.uk/rsgateway/DB/SFR/s001012/index.shtml> (accessed July,2011)

specifically on SLT for children. There are a variety of reasons for this reflecting the way that services are funded and audited.

We were interested in the extent to which service use and provision reflected social disadvantage. For the latter we then drew on the Income Deprivation Affecting Children Index (IDACI)³⁹ in each local authority. The IDACI is specifically aimed at identifying social disadvantage as it refers to children and young people. It is expressed as the proportion of all children aged 0-15 living in income deprived families. We also include two additional datasets namely spending per child in the NHS⁴⁰, and number of speech and language therapy staff^{41, 42}. To match the data from different resources to identical geographic zones, we converted them to local authority level employing software called GeoConvert (<http://geoconvert.mimas.ac.uk/>) available from the University of Manchester's MIMAS centre⁴³.

The proportions of children being identified differed in the two systems, generally showing higher figures within the education system: for example, the primary SLCN prevalence (2.3%⁴⁴) is higher than the percentage (1.4%) of 5-9 years children who look for SLT service in the NHS. Both are notably lower than would be anticipated from most sources of prevalence data in the field reflecting the shortfall between assessed levels of need identified by formal assessment and need reported by teachers or reflected in referrals to services. The number of pupils with SLCN in primary schools, but not secondary schools, was associated with social disadvantage, which is reflected by IDACI. The IDACI remains correlated to the use of NHS resources and to initial NHS contact numbers of both 5-9 years and 10-15 years olds. Interestingly the number of children identified in secondary school is correlated with the number of NHS referrals but the same is not true for those in primary school. The number of SLT staff is associated with SLCN numbers in primary but not

³⁹ Department of Communities and Local Government. (2011). *Indices of Deprivation 2010: The Income Deprivation Affecting Children Index and the Income Deprivation Affecting Older People Index*.

<http://www.communities.gov.uk/publications/corporate/statistics/indices2010> (accessed July, 2011)

⁴⁰ Children's Service Mapping. (2008). *Total spend and budget*.
<http://www.childrensmapping.org.uk/tables/profile-7/table-2125/struc-pct/year-2008/> (accessed July, 2011)

⁴¹ NHS. (2005). Table 7: *NHS speech and language therapy service*.
<http://www.ic.nhs.uk/statistics-and-data-collections/hospital-care/outpatients/nhs-speech-and-language-therapy:-summary-information-for-2004-05-england> (accessed in July, 2011).

⁴² NHS Information Centre. (2009). *NHS hospital and community health services: Qualified Speech & language Therapy staff (provided by NHS IC following email contact)*.

⁴³ <http://geoconvert.mimas.ac.uk/>

⁴⁴ It is important to note that this figure is derived for the age range five to eleven years rather than seven years the time point used by in a rather different way from the 3 % figure cited by Meschi, Micklewright and Vignoles (p.24 above) to derive their 3% figure.

secondary school. Finally, both the per-child NHS spend and the number of SLT staff are significantly correlated with the IDACI. This indicates that, even accounting for population size, more SLTs and higher NHS spending are invested in more socially disadvantaged areas. We anticipate submitting this paper to a peer-reviewed journal in due course.

Such analyses begin to describe the current picture of SLCN resource allocation and identify associations at the area level (local authority or health trust area); we can 'explain' variation *between* areas. However, there is much variation *within* areas both in terms of the number and needs of the children and the types and intensity of supports offered. It is at this level – and in the context of *resource scarcity* – that local studies of provision and interventions can be helpful in adding to the body of knowledge that decision-makers draw on when commissioning or providing services.

To date, our work at this level has focused on topics that will help commissioners, service managers and clinicians better support children with SLCN. We have sought to ensure we do not 're-invent the wheel' but start by understanding what research can already tell us. By pulling together existing research findings and best economic evaluation practice we have begun to develop ideas around applying economics techniques to SLCN research and disseminate knowledge to SLCN researchers.

9.3.2 Project 2

A review of the cost effectiveness literature related to provision for children with primary speech and language difficulties

Our first task was to undertake a review of the current 'state of play' in cost-effectiveness evaluation in the UK research and the resulting paper has been accepted by an academic journal that is commonly read by SLTs and their managers⁴⁵.

Our initial work⁴⁶ for the Bercow Review⁴⁷ had identified a paucity of literature and the rare application of economic principles in intervention studies and we hoped that the wider search

⁴⁵ Law, Zeng, Lindsay, Beecham, (in press). "The cost-effectiveness of interventions for children with Speech Language and Communication Needs (SLCN): A review using the Drummond and Jefferson (1996) "Referee's Checklist"" *The International Journal of Language and Communication Disorders*.

⁴⁶ Lindsay, G., Dockrell, J.E., Desforges, M., Law, J., & Peacey, N. (2010) Meeting the needs of children with speech, language and communication difficulties. *International Journal of Language and Communication Disorders*. 45, 448-460.

⁴⁷ Bercow, J. (2008) *The Bercow Report A Review of Services for Children and Young People (0–19) with Speech, Language and Communication Needs*. Nottingham: DCSF.

and investigation allowed within the Better Communication Research Programme would reveal a better grounding. We then went on to carry out a formal review of available cost effectiveness studies using high quality methodological standards, specifically a checklist more commonly applied in adult health care economic evaluations⁴⁸. All of the five studies included in the final review focussed on young (2-11 years) children and most compared clinic-based and parent-administered interventions. One of the key issues derived from the studies was the “perspective” from which the services were costed. Some cost only in terms of one specific service (health or education), others consider the parental costs (transport/loss of earnings etc). Others attempt to adopt a ‘societal perspective’, capturing all the costs involved.

The studies provided variable levels of detail on the key elements needed but few provided sufficient details of costs to draw comparisons across studies. Only two of the studies attempted to bring together costs and effectiveness data. The studies point to the importance of home-based and indirect intervention and, in many cases, emphasise the parental perspective and in particular the extent to which parental involvement in an intervention should be costed. Predictably if it is not, interventions often appear much more cost effective than if they are.

There is a need for intervention studies to include a cost dimension based on readily comparable methods of establishing unit costs⁴⁹ and for greater use to be made of cost-effectiveness analysis more generally. Our overall conclusion from this work was that the methods of cost-effectiveness analysis as used in health care are well-developed and highly suitable for use in evaluating SLCN interventions. However, our review showed that there were some basic techniques that, to date, were not undertaken consistently across studies, and did not follow best practice. Examples that we hope to address are the estimation of unit costs, the perspective to employ, and the analytic techniques available to link costs and outcomes.

⁴⁸ Drummond, M.F., & Jefferson, T.O. (1996). Guidelines for authors and peer reviewers of economic submissions to the BMJ. *BMJ*, 313,275-283.

⁴⁹ Beecham, J. (2000). *Unit costs – not exactly child's play*. Canterbury: Department of Health Dartington Social Research Unit and Personal Social Services Research Unit, University of Kent.

9.3.3 Project 3

Estimating unit costs of speech and language therapy for children with primary speech and language difficulties

Unit costs underpin any cost evaluation. Our review of relevant research papers found that these are commonly underestimated, perhaps considering only salaries rather than the full cost of providing a SLT or particular intervention. Moreover, while evaluations often show in some detail the impact of interventions (perhaps the improvement in a particular area of speech), they rarely are so detailed in terms of describing the *inputs* (such as staff time or use of buildings and equipment) that are employed to generate the good outcomes. Building on economic theory and a long-running programme of unit costs calculation at the **Personal Social Services Research Unit (PSSRU)**, we have set out the various challenges in estimating unit costs, and the reasons why such an approach is important.

We found that there were four challenges relating to the level of detail about the therapists, the participants, the scope of activities, and parents.

- Detailed *descriptions* are an important pre-cursor to estimating costs.
- Further stages are to *identify* the activities of the service and a relevant unit of measurement, (perhaps an hour of working time or number of patient contacts per week),
- to *estimate* the cost implications of all service elements identified at the descriptive stage,
- and finally to *calculate* the unit cost by totalling the costs of each service element and dividing this by the number of 'units' of interest.

Different assumptions made about any of these elements had a marked effect on the cost of the intervention. Nationally-applicable unit cost data for speech and language therapists can be used as a reference point, but sufficient descriptive data about delivery and receipt of the intervention are key to accuracy. This paper has now been submitted for publication⁵⁰.

⁵⁰ Beecham, J., Law, J., Zeng, B. & Lindsay, G. The costs of speech, language and communication interventions for children – submitted.

9.3.4 Project 4

Dosage and the provision for children with SLCN: the relationship of effect size to intensity, duration and amount of intervention

Our final piece of work this year has been to try and explore whether there is a ‘dosage effect’ in SLCN interventions. This is an important question. On the one hand too many SLT sessions, that is, more sessions than are required to generate the optimum positive change in SLC abilities (outcome), is likely to be a waste of scarce resources. On the other hand, too few sessions might mean that any positive benefits that do occur are not maintained as the child grows up; again a waste of resources. This attempt to capture “how much” intervention is needed has similar policy resonances to those associated with the ***Improving Access to Psychological Therapies*** initiatives⁵¹ a programme of “talking therapies” designed to promote health and wellbeing in children and young people in England⁵².

To address this issue we have re-analysed data from the 2003 Cochrane review⁵³ which provides the most robust available intervention data. To focus the analysis we looked at three different types of outcomes namely phonology, syntax and vocabulary. We then plotted *intensity, duration and amount* of the intervention against the reported effect size achieved by the intervention.

Of necessity our conclusions are tentative at this stage but it does look as if the different intervention focus leads to a different relationship between dosage and effect size. Thus:

- For intervention targeting phonology overall amount and intensity are associated with effect size but duration is not, suggesting that intensive interventions are likely to perform better than those of long duration.
- By contrast, for improvements in syntax, the data seem to suggest that duration is key; longer, more drawn out interventions are more effective.
- And finally for improvements in vocabulary a third picture emerges from the data, suggesting that, although longer duration brings better vocabulary outcomes, more

⁵¹ www.iapt.nhs.uk

⁵² Department of Health (2011) Talking therapies: A four-year plan of action: A supporting document to No health without mental health: A cross-government mental health outcomes strategy for people of all ages London: Department of Health.

⁵³ Law J, Garrett Z, & Nye C. (2003). Speech and language therapy interventions for children with primary speech and language delay or disorder (Cochrane Review). In: *Reviews* 2003, Issue 3. Art. No.: CD004110. DOI: 10.1002/14651858.CD004110.

intensive intervention does not necessarily do so. This suggests that regular short bursts of intervention over a longer period may be the optimum model of service delivery for those aiming to promote vocabulary development.

These findings remain provisional at this stage and as we confirm our findings we hope to identify whether there is an optimum level of intervention beyond which any additional benefits are marginal. Again, we anticipate submitting this paper to a peer-reviewed journal in due course.

9.4 Conclusions

Thus the work to date has taken a 'pincer-like' approach to understanding allocation of resources through exploration of the national picture by integrating and analysing routinely-collected data, and by examining local service provision through existing evaluations. Dissemination of this information is key to a wider understanding of how resources are allocated currently, and identifying ways allocation can be improved.

Outstanding tasks for next year include completing the analysis and the publication programme described above. We plan to provide a simple guide for those interested in carrying out local cost audits. We are also proposing to extend this work by looking at cost data collected in other parts of the BCRP such as within the prospective study and the stammering intervention sub-project, both referred to elsewhere in this interim report.

10. PROSPECTIVE COHORT STUDY OF SLT SERVICES FOR YOUNG CHILDREN WHO STAMMER IN ENGLAND

Sue Roulstone and Rosemarie Hayhoe

10.1 Aim

This research aims to determine the outcomes of the treatment that young children who stammer (CWS) receive in community clinics and to determine the factors that impact upon treatment implementation and outcome.

We report on progress to date. This has raised important questions about the research governance systems for multi-site research

10.2 Background

Stuttering is a low-incidence impairment so the numbers of children being referred to any particular service are relatively low. Provision for these children varies between and within services. Services vary in the interventions offered and even within a particular type of intervention, there will be variation in how it is delivered: for example, services vary in the number of therapists who are trained to use the Lidcombe Program (LP), and very few use this program exclusively; evidence suggests that therapists do not use the LP as set out in the manual. Furthermore, services vary in the level of expertise offered. For example, some services identify one or more therapists who service the majority of the stammering workload, thus building experience and expertise in the intervention techniques; in other services, children who stammer are seen by their local therapist who may or may not have specific training in any particular approach. Research into the differing approaches has so far produced strong⁵⁴ evidence only for the LP; other approaches have only indicative evidence to date.

Given these differences between therapists and services, it was felt that a comparative study, of one service with another, would be invalid or impossible to design. However, a cohort study, with sufficient power to take account of the variation, would be able to investigate associations between service variation, child variation (in age and severity for example) and outcomes.

⁵⁴ Lindsay, et al (2010), Section 2

10.3 What we have done

10.3.1 Design

This is a prospective cohort study with pre and post-intervention measures and information on the intervention received and on child and family variables. A target recruitment of 200 children was established in order to provide sufficient power for analysis of explanatory variables. A minimum of 10 departments were needed to obtain necessary numbers of children within the study time-frame. Departments were recruited via British Stammering Association networks and Royal College of Speech & Language Therapists managers' networks.

The aim was to establish at least 10 departments with a range of services for children who stammer, a range of expertise, with low and high referral rates and populations with diverse demographic characteristics. The original protocol required a six month follow-up. However, because of various delays (see below), this has been amended to a four month follow-up period. Although not ideal, this period of time for children under the age of seven years still provides valid and useful data on the impact of any intervention offered.

10.3.2 Participants

- Children aged up to 6:11 years at the beginning of treatment with a consensus diagnosis of stammering between parent and SLT.
- Speech and language therapists in the general community (NHS clinics), including trusts with both low and high referral rates in order to account for possible association of high referring areas, specialist facilities and outcomes.

10.3.3 Progress to date

Set-up period

Organisation of the study, obtaining the necessary approvals and recruitment of the study has been problematic at every stage. In summary, the difficulties have included:

R&D governance processes

- Some R&D departments have seen the design of the study as unproblematic and have approved the study within a couple of months.
- Some see the study as unproblematic but because of staff changes or illness have misplaced or delayed the study.
- Some departments have required changes to the study design which has in turn required us to return to the ethics committee for approval of amendments.

SLT issues

- In some instances the recruitment process set out in our protocol was not seen to be viable by local departments, thus requiring changes to protocol and to the related documentation for the study which then required ethical approval before seeking local R&D approval.
- Local management changes were placing such a strain on local SLTs that one department has withdrawn despite their initial enthusiasm to be involved and the completion of the lengthy R&D approval process. Four additional recruited Trusts are undergoing major structural & management changes which have increased non-clinical workload and had a negative impact upon staff morale. These departments wish to contribute to the study and are hopeful that by early September staff will be able to resume their usual level of clinical activity and so recruit children to the study.
- SLTs who are engaged in the study are not experienced researchers and therefore not used to the process of identifying children for studies or in recruiting them.
Working through the issues related to a study therefore requires time and support.

Data protection issues

The study requires sending digitised language samples to our team at the University of the West of England (UWE). There were varying levels of scrutiny in terms of the questions and requirements related to this process, despite the fact that the samples are anonymised and approved by parents before they are sent (a process approved by the ethics committee).

We are collaborating with a research group in Canada in order to use a new assessment that investigates children's functional communication. As part of the agreement, we will be sending copies of this anonymised data (agreed by parents in their consent sheet and

approved as such by ethics) to the Canadian research group. Some data protection groups were not happy that data was being transmitted out of the country.

Recruitment

By the end of July:

- 16 Trusts expressed an interest
- 12 Trusts agreed to participate in the study, and R&D approval was obtained
- 36 therapists within those Trusts agreed to participate
- 11 therapists had recruited children to the study
- 29 children had been recruited.

10.4 Conclusions

In conclusion, the research process has highlighted the difficulties of working with a low incidence group that is managed in a wide variety of ways across the country. It has further highlighted the vagaries of the current system for the governance of multi-site research. The research team have worked successfully with the Research Offices and Ethics Committee to resolve each issue. We are now in a position to complete recruitment and with a short extension could also complete the follow-up of these children.

A recent study of children who stammer in the Avon Longitudinal Study of Parents and Children demonstrated that those children whose stammer persists to the age of eight present with significantly more difficulties in areas of friendships and bullying. Furthermore, their academic achievements were also lower than their non-affected peers (Hayhoe et al, in preparation). This study, which looks at children who stammer up to the age of 7 years could therefore provide important information about that would increase our understanding of the variation in outcome and therefore indicate ways to improve outcomes for these children.

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Appendix 1 Interventions for children with SLCN in England: A survey of speech and language therapist: Additional information

A1 Published programmes

Table A1. shows the frequency of use of the listed published programmes . The question asked individuals to indicate which of the listed programmes with a child aged ([age group most frequently worked with](#)), with a special educational need ([most frequently worked with](#)) in a particular setting ([the most frequently worked in](#)). Respondents were asked to select all that applied.

Table A1. Frequency of use of all programmes identified by SLTs

<i>Published programmes used</i>	<i>Use rarely %</i>	<i>Use sometimes %</i>	<i>Use frequently %</i>	<i>Combined sometimes /frequently %</i>
Derbyshire Language Scheme	9.3	27.4	37.9	65
Makaton	11.0	23.5	35.1	58
PECS - Picture Exchange Communication System	16.4	23.7	15.1	49
Nuffield	12.5	27.8	19.0	47
Core Vocabulary	9.5	23.5	17.0	40
Hanen	12.7	18.8	20.9	39
Social Stories (Carole Grey)	14.4	23.9	14.7	39
Colourful Semantics	13.2	23.7	12.9	36
Language for Thinking	13.1	15.7	15.7	31
Becky Shanks Narrative packs	13.6	16.8	14.6	31
Talkabout (Alex Kelly)	15.9	20.0	10.8	31
Other published programme	12.5	12.1	17.9	30
Intensive Interaction	14.4	16.8	14.4	30
Service developed programme	8.0	7.1	20.9	28
Socially Speaking	14.6	20.1	7.6	27
Social Use of Language Programme	16.2	19.8	7.3	27
Cued Speech	18.5	17.9	8.0	26
Living Language	20.3	16.6	6.0	23
TEACCH - Treatment and Education of Autistic and related Communication handicapped Children	16.2	13.1	9.3	22
Metaphon	18.8	14.2	5.8	20
Comic Strip Conversations (Carole Grey)	15.9	15.5	4.5	20
Signalong	14.6	7.1	7.6	14
Circle of Friends	17.7	12.3	1.1	13
Time to Talk	16.6	8.6	4.1	12
Lidcombe Program	18.5	7.5	4.1	11
Visualise and Verbalise	18.7	6.3	3.9	10
Swindon Dysfluency pack	17.7	5.0	2.2	7
Teaching Talking	18.8	4.1	1.9	6
Talking Partners	16.4	4.7	1.3	6
Language Land	16.8	3.4	1.7	5
Bobath approach	18.5	4.3	0.7	5
BLAST - Boosting Language Auditory Skills and Talking	17.9	1.3	1.7	3
POPAT - Programme of Phonological Awareness Training	17.9	1.7	1.7	3
Language Link	17.9	2.1	1.1	3
Spirals	18.5	3.0	0.6	3
Susan Myers Bumpy speech	17.5	2.6	0.4	3
ABA - Applied Behaviour Analysis	20.0	3.7	0.2	3
Speech Link	18.1	1.5	0.6	2
Talk to your Bump	18.3	1.3	0.4	2
PEEP - Peers Early Education Partnership	17.2	1.9	0.2	2

N=536

When asked to specify 'other published programmes', 162 comments were made. Likewise, there were 126 specified service developed programmes.

A2 Intervention activities

Table A2 below shows the frequency of use of intervention activities. The question asked individuals to indicate their use of the listed interventions with a child aged (*age group most frequently worked with*), with a special educational need (*most frequently worked with*) in a particular setting (*the most frequently worked in*). Respondents were asked to select all that applied.

Table A2 Frequency of use of intervention activities

<i>Intervention Activities</i>	<i>Use rarely %</i>	<i>Use sometimes %</i>	<i>Use frequently %</i>
Auditory discrimination activities	4.9	21.3	42.7
Phonological awareness tasks	5.0	25.6	41.4
Minimal pair discrimination or production	7.1	21.1	36.6
Barrier games	6.2	31.5	34.5
Auditory memory activities	6.9	30.8	31.2
Narrative therapy	8.4	31.5	27.1
Traditional articulation activities	8.8	22.6	25.4
Rhyme awareness activities	9.7	29.7	24.3
Other intervention activities	6.9	11.4	20.3
Cued articulation	16.4	20.7	13.1
Auditory bombardment/focused auditory stimulation	12.5	19.6	10.4

N=536

When asked to specify other intervention activities frequently used, 133 other activities were reported.

A3 Principles or approaches

Table A3 shows the frequency of use of the following *principles* or *approaches*. The question asked individuals to indicate their use of the listed principles/approaches with a child aged (age group most frequently worked with), with a special educational need (most frequently worked with) in a particular setting (the most frequently worked in). Respondents were asked to select all that applied. Frequencies are shown in Table A3 below.

Table A3 Frequency of use of principles or approaches

<i>Principles or Approaches</i>	<i>Use rarely %</i>	<i>Use sometimes %</i>	<i>Use frequently %</i>
Modelling	0.4	8.0	86.8
Creating a language rich environment	1.7	10.1	71.8
Repetition	1.5	13.4	70.5
Visual approaches to support language	2.2	15.3	67.9
Providing feedback	1.7	12.5	67.0
Forced alternatives	2.8	18.1	66.0
Waiting for response	1.3	13.1	66.0
Commenting	1.9	15.5	65.3
Reducing distractions	1.7	20.1	62.1
Reducing questions	2.1	19.2	62.1
Differentiating the curriculum	3.2	13.4	58.2
Extending	1.9	14.6	57.8
Using key words	2.6	19.4	57.6
Visual timetables	4.5	26.7	53.0
Signing	9.1	28.4	44.4
Use of symbols	7.5	27.2	41.2
Chunking	6.3	17.4	41.0
Total communication	5.6	18.3	34.7
Increasing awareness of errors	7.5	25.9	32.3
Parent child interaction (PCI)	11.8	20.1	31.9
Using objects of references	14.7	25.0	25.7
Use of alternative and augmentative communication	12.5	25.6	25.4
Task management boards	11.2	21.6	16.8
Workstations	13.8	17.4	13.6
Other principle or strategy used in intervention	3.0	3.4	8.2
Use of British Sign Language	20.3	5.0	3.9

N=536

A4 Frequency of delivery

SLTs were asked to indicate how frequently they would personally usually deliver the intervention they used **the most** with a child aged ([age group most frequently worked with](#)), with a special educational need ([most frequently worked with](#)) in a particular setting ([the most frequently worked in](#)). Respondents were asked to select one only (Table A4).

Table A4 Frequency of delivery of intervention

<i>Frequency of delivery</i>	<i>%</i>
Throughout the day	6.4
Once a day	1.0
Two or three times a week	9.8
Once a week	47.5
Once a fortnight	10.0
Once a month	8.2
Once a term (6 weeks)	11.6
Once a double term (3 months)	4.6
Less than once a double term	1.0

N=501

A5 Specific outcomes

Respondents were asked what specific outcomes they were targeting for the broad based outcomes they had previously identified. Please note that this question only appeared for the broad based outcome/s which individuals had selected previously, therefore the sample base varies for each question. Percentages are based on the number of respondents these questions were posed to (N), after question routing and filtering.

Among the most frequently reported specific outcomes for communication is the improved use of communication skills and improved attention and listening skills, identified by around three-quarters of respondents (Table A5).

Table A5 Specific outcomes targeted for Communication

<i>Specific outcomes: Communication</i>	%
Improved attention and listening skills	75.6
Improved use of communication skills (e.g. non-verbal clues, initiating)	74.1
Improved social skills	54.3
Improved parent/child interaction	48.4
Provision of a means of communication	43.2
Improved pre-verbal skills	35.8
Improved inference/verbal reasoning skills	29.1
Other	3.7

N=405

Note: Respondents could choose one or more outcomes

Improved understanding of language, and improved expressive language were specific outcomes identified by 90% of responding SLTs. Extended vocabulary was another likely outcome, which just under three-quarters of this sample identified (Table A6).

Table A6 Specific outcomes targeted for Language

<i>Specific outcomes: Language</i>	%
Improved expressive language	90.3
Improved understanding of language	90.1
Extended vocabulary	73.7
Improved narrative skills	42.2
Improved word finding	40.1
Other	3.0

N=372

Note: Respondents could choose one or more outcomes
 The most commonly reported specific outcome for speech sound system was increased intelligibility (90%). Improved phonological awareness/speech processing skills and change in speech sound system were also frequently identified, as was consistency of speech production (Table A7).

Table A7 Specific outcomes targeted for Speech Sound system

<i>Specific outcomes: Speech sound system</i>	<i>%</i>
Increased intelligibility	90.0
Change in speech sound system	73.3
Improved phonological awareness or speech processing skills	72.8
Consistency of speech production	70.6
Improved oro-motor skills	35.6
Other	1.1

N=180

Note: Respondents could choose one or more outcomes

Almost three-quarters of responding SLTs reported increased participation in all activities involving verbal communication (Table A8).

Table A8 Specific outcomes targeted for Fluency

<i>Specific outcomes: Fluency</i>	<i>%</i>
Increased participation in all activities involving verbal communication	77.8
Decreased frequency of stuttering	55.6
Reduced severity of stuttering	53.3
Awareness of fluency	51.1
Other	6.7

N=45

Note: Respondents could choose one or more outcomes

ⁱ All Z scores have a mean of) and a standard deviation of 1

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