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Research Report

Communication skills in a population of primary school-aged children raised in an area of pronounced social disadvantage

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Abstract

Background: Previous studies have highlighted the level of communication difficulty experienced by children from socially disadvantaged backgrounds, but the pattern of difficulties remains unclear.
Aims: The study asks whether the performance of a community sample of children from one of the most socially disadvantaged neighbourhoods in Scotland is best characterized by a general delay in all areas of development, by difficulties across the more formal structural aspects of language or in phonological skills.
Methods & Procedures: The study included 138 monolingual English-speaking children: 63 (45.7%) boys and 75 (54.3%) girls aged between 5 and 12 years. All children were assessed blind to educational attainment in the school.
Outcomes & Results: Nearly 40% of children had delayed language development with 10% having severe difficulties. The children presented with an uneven profile with much lower structural language scores than reading, general communication skills or non-verbal performance. Although service use was high in the group as a whole, the proportion who met criteria for specific language impairment on discrepancy criteria were not those who were being referred to speech and language therapy.
Conclusions & Implications: Although many children were performing well within the normal range, a substantial proportion were not, having considerable implications for the way that services are delivered to these children. Given the high prevalence of delayed structural language difficulties in this group, there is a clear need for a more universal 'population'-based approaches to service delivery.

Keywords: children, evidence-based practice (EBP), developmental language impairment, intervention, behaviour.

What this paper adds

What is already known on this subject?

We know that children from socially disadvantaged background tend to perform poorly on many measures of educational attainment leaving them vulnerable to underachievement in school.

What this paper adds

The study found high levels of semantic and syntactic language difficulty in disadvantaged children, although, contrary to expectations, this was not true either across all aspects of development or across communication more specifically. In particular, the finding that non-word repetition scores were within the normal range has important implications, as does the finding that the boys did not have significantly lower scores than the girls. The study raises questions about how need is defined in such populations.

Introduction

It is well recognized that social disadvantage affects a child's health and development, whether this relates to sickness, educational attainment or communication skills (Leventhal and Brooks-Gunn 2000, Gross 2008). Indeed the association with social disadvantage and language development has been recognized for well over half a century (Schatzman and Strauss 1955). It has been argued that communication skills seem to be particularly

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sensitive to the role played by parental input, particularly in the early years (Hart and Risley 1995) although it remains unclear whether we should anticipate a consistent level of difficulty across all areas of communication development or whether some areas are more sensitive to limited exposure than others. For example, a case has been made that restricted input has a particular impact on phonological skills (Burt *et al.* 1999, Robertson 1998) and that there may be something about the nature of the linguistic environment, specifically the way that activities are structured to draw the attention of the children to the structural features of language which makes the difference (Tunmer and Hoover 1992). Thus, if those in the child's immediate environment foster phonological processing skills, drawing the child's attention to rhymes, alliteration etc., it would be reasonable to assume that such children would become more proficient in language. There is also some suggestion that the relationship between socio-economic status and phonological processing may be sensitive to age, the relationship becoming stronger over time for high socio-economic status but not low socio-economic status groups (McDowell *et al.* 2007). There has been a longstanding difference of opinion deriving from some of the earliest debates about the relative roles of vocabulary and narrative skills (Bernstein 1970, Labov 1972). Some have suggested that narrative skill is the best predictor of outcomes for the children with specific language impairment (SLI) (Bishop and Edmundson 1987), others that, while narrative is a significant predictor of preschool outcomes for children with poor language development associated with social disadvantage, oral vocabulary is a more useful predictor in children with SLI (Fazio *et al.* 1996). Much less is known about the development of pragmatic skills in relation to social disadvantage. While it might be anticipated that these skills would also be differentially affected given the nature of the reported input and, although there is evidence for an association between pragmatic and behaviour difficulties (Gilmour *et al.* 2004), this has never been examined systematically in a group of unreferred children. The process by which communication skills are elicited is almost certainly central to the profiles reported. While it is clear that test performance is likely to be closely associated with maternal education levels (Dollaghan *et al.* 1999), relatively little progress has been made trying to identify a 'knowledge independent' measure, although non-word repetition has been proposed as a potential candidate (Dollaghan and Campbell 1998).

One study that has tried to unpick some of these issues followed a group of over 200 socially disadvantaged primary school children between 3 and 5 years (Locke *et al.* 2002, Locke and Ginsborg 2003). These authors concluded not only that children had much higher levels of language difficulties than would be anticipated for their age, but also that language skills were affected more than non-verbal performance and that the discrepancy between language and IQ widened over time for the boys in particular. The proportion of children with language skills falling outside the normal range (i.e. below the 16th centile) was 56% at 3 years with 9.4% achieving scores two or more standard deviations (SDs) below the mean, figures corroborated by a more recent study which showed reporting 49% and 10% respectively in a population of 3 year olds (King *et al.* 2005). The figures from these studies have implications for the understanding of the development of universal services and have fed back into the process of developing both policy and services for this group of children (Bercow 2008). Whether such discrepancies are a function of deviance or difference remains something of a moot point (Wells 1985) but they clearly have potentially enormous implications for the development of services for these children.

The present study was set up to revisit the issue of the relationship between communication and social disadvantage. It extends the analysis of Locke *et al.* (2002) by widening both the range of measures adopted to include boarder communication skills, narrative skills and non-word repetition and the age at which they were elicited. We were also interested in exploring this relationship in relation to gender. For many years it has been assumed that boys developed language much more slowly than girls but at odds with findings which draw on large-scale cohort data (Law *et al.* 2010).

Research questions

- To what extent do the language and non-verbal skills of a group of socially disadvantaged children reflect those of the population as a whole?
- To what extent does the pattern of language difficulties differ relative to gender?

Methods

Participants

One hundred and sixty-seven pupils were assessed as part of a whole school audit of language and communication skills in a primary school in the south-east of Scotland during 2009. The school is located within one of the areas of highest deprivation in Scotland with 96.9% of children included in the study living in an area within the first quintile on the Scottish Index of Multiple Deprivation (SIMD) (2006). The SIMD is a composite measure of social status that is both widely used in reporting service access and is readily available. Twenty-nine children had English as an additional language

and were excluded from this study regardless of ability. This left a sample of 138 children, aged between 5 and 12 years, which consisted of 63 (45.7%) boys and 75 (54.3%) girls. The mean age of the children was 107.2 months (range 64–158 months, SD = 23.6 months). There were seven classes with a range of 17–23 children in each class. The overall level of need in the school was high with 44 (31.96%) of the children recorded as having additional support needs. There were 14 (10.1%) 'looked after' children, 32 (23.2%) children were having support for their behaviour, 16 (11.6%) had been referred to speech and language therapy, 7 (5.1%) to occupational therapy, 10 (7.2%) to community child health services and 34 (24.6%) had a social worker.

Procedure

The children were assessed in the majority of cases in single 90-min session by a psychologist with specific training in the use of psychometric measures. In 11% of cases the assessments were split into two sessions if it was felt that this was more appropriate for a given child. The assessor was blind to referral status for additional support or information pertaining to any medical diagnosis that the child might have received. The study was carried out with the active engagement of the head teacher and staff. All parents were informed about the project by school newsletter and given the chance to opt out of the project.

Measures

*The Clinical Evaluation of Language Fundamentals, Fourth UK Edition (CELF-IV) (*Semel *et al.* 2006)

This test has differentiated subtests for children above and below 8 years of age. Those used for children between 5 and 8 years were Concepts and Following Directions; Word Structure; Recalling Sentences; Formulated Sentences; Word Classes—Receptive and Sentence Structure. The subtests used for children between 9 and 12 years were Concepts and Following Directions; Recalling Sentences; Formulated Sentences; and Word Classes. In addition the children were assessed on:-

- The British Picture Vocabulary Scale (BPVS) (Dunn *et al.* 1997).
- The Expression, Reception and Recall of Narrative Instrument (ERRNI) (Bishop 2004).
- The Children's Communication Checklist (CCC-2) (Bishop 2003).
- Children's Test of Non word Repetition (CNRep) (Gathercole and Badderly 1996).
- Test of Word Reading Efficiency (TOWRE) (Torgeson *et al.* 1999).
- Wechsler Abbreviated Scale of Intelligence (WASI) (Wechsler 1999).

In addition the children's teachers completed the Strengths and Difficulties Questionnaire, the details of which are reported elsewhere (Law *et al.* 2010).

Results

Table 1 shows the mean scores on the CELF-IV Core Language, Receptive Language and Expressive Language composites along with the standard score for the BPVS. The mean scores of the children are on the boundary of normal and delayed language with means of 87.04 (12.45), 86.67 (14.16) and 85.96 (12.40) for Core, Receptive and Expressive Language respectively. The mean scaled CELF Core scaled scores (not shown) for each class ranged from 27.22 to 34.95. There were no statistical differences between classes except for class 2, which differed from classes 1, 5 and 6.

The results for the other measures are provided in table 2. The mean WASI non-verbal IQ for the children was 95.89 (12.68) just over 4 points less than expected for the normal population, and therefore well within the average range. The low overall language abilities of children cannot therefore be attributed to low cognitive abilities. Similarly, scores on the four other measures, namely (narrative abilities (ERRNI), general communication skills (CCC2), reading (TOWRE) and non-word repetition (CNRep), were compared with their

Table 1. Receptive and expressive language and vocabulary scores by gender

	Mean (SD) for the measure	All	Boys	Girls	Gender differences
Total score ($n = 138$), mean (SD)	100 (15)	87.04 (12.45)	86.52 (11.83)	87.47 (13.01)	$t(136) = -0.442$, $p = 0.659$
Receptive language, mean (SD)	100 (15)	86.67 (14.16)	85.22 (13.03)	87.89 (15.02)	$t(136) = -1.105$, $p = 0.271$
Expressive language, mean (SD)	100 (15)	85.96 (12.40)	85. 48 (11.64)	86.36 (13.06)	$t(136) = -0.416$, $p = 0.678$
BPVS, mean (SD)	100 (15)	92.62 (9.35)	94.30 (8.26)	91.24 (10.00)	$t(133) = 1.907$, $p = 0.059$

Table 2. Non verbal skills, non-word repetition, narrative, communication reading and non-word repetition scores by gender

Test (n)	Mean (SD) for the measure	All	Boys	Girls	Gender difference
WASI ($n = 131$), mean (SD)	100 (15)	95.89 (12.68)	95.8	95.97	$t(129) = 0.079$, $p = 0.938$
Block Design, mean (SD)	50 (10)	50.72 (8.34)	51.17	50.35	$t(129) = 0.56$, $p = 0.576$
Matrix Reasoning, mean (SD)	50 (10)	43.98 (10.78)	43.53	44.36	$t(129) = -0.44$, $p = 0.661$
ERRNI Initial Storytelling (131), mean (SD)	100 (15)	93.68 (14.53)	91.56	95.42	$t(129) = -1.520$, $p = 0.131$
ERRNI Recall Storytelling (131), mean (SD)	100 (15)	93.12 (16.92)	91.19	94.71	$t(129) = -1.249$, $p = 0.214$
ERRNI Forgetting (98), mean (SD)	100 (15)	99.4 (13.89)	98.95	99.75	$t(96) = -0.279$, $p = 0.781$
ERRNI Comprehension (131), mean (SD)	100 (15)	97.49 (13.14)	95.86	98.82	$t(120) = -1.284$, $p = 0.202$
CCC2 GCC (125), mean (SD)	100 (15)	73.50 (22.64)	74.31	72.86	$t(123) = 0.355$, $p = 0.723$
TOWRE Word Reading Efficiency Standard Score (131), mean (SD)	100 (15)	96.72 (14.4)	95.66	97.58	$t(129) = -0.759$, $p = 0.449$
TOWRE Sight Word Efficiency Standard Score (131), mean (SD)	100 (15)	95.60 (12.8)	94.59	96.42	$t(129) = -0.809$, $p = 0.420$
CNRep ($n = 63$), mean (SD)	100 (16)	105.61 (13.42)	106.8	104.45	$t(59) = 0.68$, $p = 0.5$

Table 3. Association of test scores (r)

	CELF IV Core language	BPVS	WASI		ERNNI		CCC2		TOWRE	
			BD	MR	IS	RS	GCC	SIDC	SWE	PDE
CELF IV Core language	1.000									
BPVS	0.561**	1.000								
WASI Block Design	0.314**	0.617**	1.000							
WASI Matrix Reasoning	0.427**	0.678**	0.431**	1.00						
ERRNI Initial Storytelling	0.192*	0.492*	0.5**	0.409**	1.000					
ERRNI Recall Storytelling	0.352**	0.299**	0.232**	0.19*	0.352**	1.000				
CCC-2 GCC	0.495**	0.145	0.274**	0.309**	0.156	0.084	1.00			
CCC-2 SIDC	−0.252**	−0.197*	−0.207*	−0.137	−0.169	−0.104	−0.169	1.00		
TOWRE Sight Word Efficiency	0.321**	0.782**	0.637**	0.606**	0.498**	0.239**	0.250**	−0.2*	1.000	
TOWRE Phonemic Decoding Efficiency	0.352**	0.717**	0.589**	0.877**	0.435**	0.175*	0.277**	−0.145	0.916**	1.000
CNREP	0.390**	0.698**	0.543	0.482**	0.446**	0.242**	0.207*	−0.296**	0.664**	0.583**

Notes: $^{**}p < 0.01$ and $^{*}p < 0.05$. SIDC, social interaction deviancy composite, SWE, single word efficiency, PDE, phonemic coding efficiency

respective standardization samples. Finally, we examined the CNRep scores of the children who fell within the age range of the standardization sample—below 108 months. For the 63 children within the age range the mean standard score was 105.61 (SD 13.43). As both tables 1 and 2 indicate, no gender differences were identified for any of the measures with a slight advantage to the girls for all but BPVS, CNRep and CCC.

Of course, one of the potentially complicating factors is the level of overlap between the different measures (table 3). One of the most interesting findings is that, although the children's CCC2 GCC score is associated with CELF IV, and WASI it is not associated with other measures. It is noteworthy that while the CNrep association with BPVS is a little higher than that reported across a number of studies in the test manual, the relationship between CNRep and the WASI Block design and matrix reasoning are almost identical to the associations reported by the test's authors to a test of digit span (Wechsler 1999).

We then looked at the number of children whose language skills fell outside the normal range for their age. Following the psychometric convention used by Locke *et al.* (2002) we grouped children on CELF IV into those with moderate language delay (scoring 1–1.5 SD below the mean), moderate to severe language delay (1.5–2 SD below the mean), and severe language delay (scoring below 2 SD from the mean). As table 4 shows, 39.9% of children have any language delay, considerably higher than would be anticipated from the −1 SD cut point (i.e. 16%) and 10% of

Table 4. Percentages of children suffering from moderate, moderate to severe, and severe language delays in receptive, expressive and core language abilities

		Boys		Girls		All	
Number of children tested		*n*	%	*n*	%	*n*	%
Total	Moderate	13	20.6	16	21.3	29	21.0
	Moderate to severe	6	9.5	7	9.3	13	9.4
	Severe	6	9.5	7	9.3	13	9.4
	Total	25	39.7	30	41.3	55	39.9
Receptive language	Moderate	11	17.5	10	13.3	21	15.2
	Moderate to severe	10	15.9	7	9.3	17	12.3
	Severe	7	11.1	10	13.3	17	12.3
	Total	28	44.4	27	40.0	55	39.9
Expressive language	Moderate	9	14.3	7	9.3	16	11.6
	Moderate to severe	11	17.5	16	21.3	27	19.6
	Severe	7	11.1	8	10.7	15	10.9
	Total	27	42.9	31	36.0	58	42.0

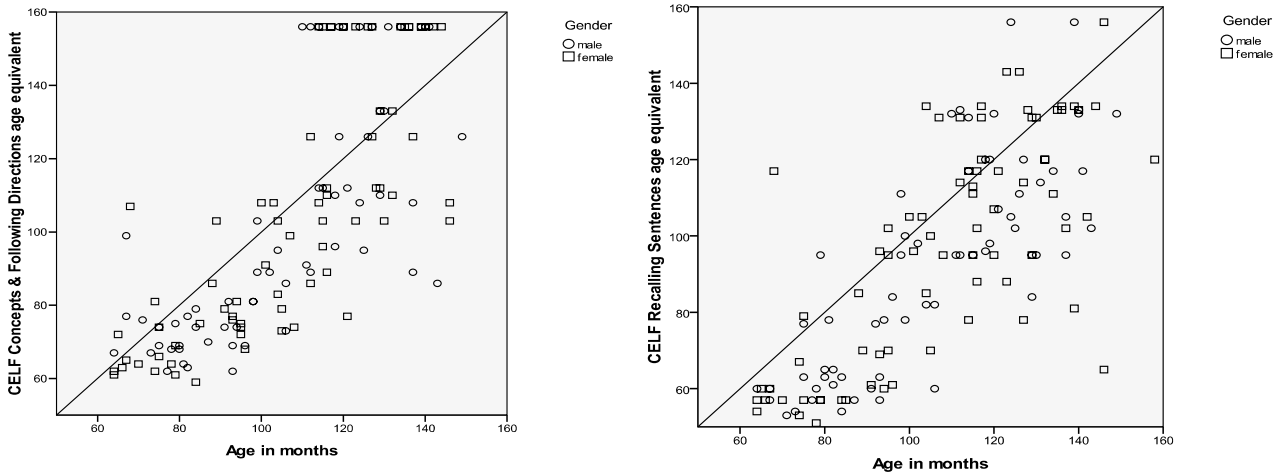

Figure 1.

children have a severe language delay (i.e. below −2 SD) where the comparable figure from the standardization would be approximately 2%.

The scale of the difficulties becomes even clearer when language-age equivalents are considered. We illustrate this with two plots from CELF IV (Concepts and Following Directions and Recalling Sentences) in figure 1, selected because they represent receptive and expressive skills respectively and because they are two of the scales that are consistent across both versions of the test. It shows the age-equivalent scores in comparison with age in months for boys and girls. The diagonal line represents where children should be placed if they are scoring at the level according to their age. If the dots are above the line, the children are scoring above their age on the subtest in question, and if they are below the line the children are scoring below their age. It is clear that the majority of children are falling below their age equivalents on these particular scales, although there is considerable variability both within and between classes.

To address the question of how specific the children's difficulties were, we cross-tabulated three different cut points for the CELF IV Core language Score and the WASI Non Verbal performance score (table 5).

Eighty-two children (62.5%) obtained scores within normal limits on CELF IV and 111 (84.7%) scored within normal limits on WASI. Forty-nine children (37.4) scored below average on the CELF IV leaving eleven children (8.3%) who scored outside the normal range on both scales. We then operationalized a group of children with SLI using conventional discrepancy criteria with the level of difficulty set at −1.5 SD below the mean. We see that 16 children (11.6%) meet this criterion. This is rather more than might be anticipated given the commonly cited figure of 7.4% (Tomblin *et al.* 1997). Interestingly, Fazio *et al.* (1996) reported the figure of 4.65% of children meeting the criteria

Table 5. Comparison of language and non-verbal scores

		WASI performance IQ cut off scores				
		Within normal limits	−1 to −1.5 SD	−1.51 to −2 SD	Below −2 SD	Total
CELF IV Core language cut-off score	Within normal limits	73	7	2	0	82
	−1 to −1.5 SD	22	2	0	0	24
	−1.51 to −2 SD	10	1	1	1	13
	Below −2 SD	6	3	1	2	12
	Total	111	13	4	3	131

for SLI in a comparable sample combining both a discrepancy criteria and performance on a set of specific experimental procedures. Finally, we looked at which of these children had been in receipt of speech and language therapy services. The figure (i.e. 16) was the same but only two of the children with SLI using the criterion had been referred to speech and language therapy.

Discussion

At one level the results from this study should give few surprises. The results for CELF IV and WASI were higher than CELF P (84.3) and BAS II (91.7) cited by Locke and colleagues, suggesting that this sample may not have been as 'disadvantaged' as those in Locke's sample, although the age differences between the samples remains an issue. Otherwise, the profile was strikingly similar in terms of the level of need and the disparity between language and non-verbal performance, notwithstanding the age of the children and the measures employed (Locke *et al.* 2002). However, this study goes further than Locke by examining a broader range of skills. It is clear that there is a rather mixed profile of performance in other areas. On the one hand the relatively 'normal' narrative and reading skills suggests that care needs to be taken in assuming that these skills are necessarily an area of weakness in this population. On the other hand the relatively low General Composite Score on the CCC 2 suggests that these children are generally quite immature in their communication skills.

The finding for non-word repetition is in line with the suggestion of Dollaghan and Campbell (1998) that there may be something about the phonological skills tapped by this type of task which makes them less susceptible to restricted environmental input, perhaps reflecting an inherent capacity rather than a learned skill. It may be that any link between social disadvantage is a function of the age of the child or indeed, as McDowell *et al.* (2007) suggest, that it is the combination of the two that is critical. It also may be a context-specific issue related to the strong pedagogical emphasis on phonological processing skills and the small class size in the school in question (a maximum of 23).

Study limitations

The sample size was relatively small and confined to a specific area. It is unclear to what extent the findings would generalize. All the measures employed in the study are commonly used by speech and language therapy practitioners and psychologists, but not by teaching staff. It is unclear how these results map onto standard school assessments. Feedback to the school did not suggest that the results were markedly different from those measures that they used to monitor the children, but the level of overlap invariably remains an issue when a range of constructs are being tapped. One of the potential limitations of the study is that the age range covered is relatively wide, raising the prospect of age-related differences in response to the test material and the relatively small number of children in each class increasing the risk of uneven variability across the group. Finally, we need to comment on the age range of the measures used. We have the specific issue of the change of the subtests used above and below 8 years of the CELF IV, although it is difficult to interpret this as problematic from the results. We would also note that although ERNNI does cover the whole age range, the author of the test suggests that it may not be as useful for younger children (up to 6 years). Although the mean scores for the children in this study were rather lower than the average for the population, this does not appear to have represented a major concern.

Implications for practice and policy

The results point clearly to the high level of language need in the population concerned, despite the very positive orientation towards appropriate instructional methods in the school concerned. It is evident that oral language skills should continue to be instructed, encouraged and monitored in the early years, and probably well beyond the conventional 'speaking and listening' goals commonly adhered to within the English

National Curriculum. There are various routes through which this may be achieved both within the school system and through support services such as speech and language therapy. However, it is important to stress that the sheer number of children identified in this and the other cited studies makes a clinical 'referral' model of service delivery impractical. In terms of the delivery of health services we are really looking at a 'public health' model in which the responsibility for enhancing speech and language skills becomes the remit of all school staff supported by speech and language therapy services and psychology services where appropriate. Locke and colleagues have argued that the focus on the compulsory literacy and numeracy hour within the English educational system, while promoting the skills in question, effectively reduced the attention paid to oral language skills, although it is less easy to say that this is true in Scotland where oral language skills have remained a priority.[1] A great deal of energy and resources are already directed towards this type of enterprise especially in the early years (Clegg and Ginsborg 2006), but their application is often inconsistent and their impact is rarely evaluated.

Conclusions

This study has clearly demonstrated from the assessment of a community sample of children living in one of the most disadvantaged areas in Scotland that children in low socio-economic groups are especially vulnerable to having structural language delays in primary school even given all the additional support that such children receive in terms of nursery provision and additional curriculum support. This issue needs to be tied to current educational policy and practice so that teachers are aware of the level of speech, language and communication need in these children. The results also have implications for the potential long-term outcomes for these children and their ability to exploit the curriculum and to flourish as individuals.

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

Note

1. See http://www.ltscotland.org.uk/curriculumforexcellence/curriculumoverview/index.asp/.

References

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) (available at: http://www.dcsf.gov.uk/bercowreview).

BERNSTEIN, B., 2003, Social class, linguistic codes and grammatical elements. In B. Bernstein. *Class, Codes and Control Volume 1: Theoretical Studies Towards and Sociology of Language* (reprint of 1971 volume) (London: Routledge), 95–118.

BISHOP, D. V. M., 2003, *The Children's Communication Checklist*, 2nd edn (London: The Psychological Corporation, Harcourt Assessment).

BISHOP, D. V. M., 2004, *Expression, Reception and Recall of Narrative Instrument. ERNNI* (London: The Psychological Corporation, Harcourt Assessment).

BISHOP, D. V. M. and EDMUNDSON, A., 1987, Language impaired four year olds: distinguishing transient from persistent impairment. *Journal of Speech and Language Disorders*, **52**, 156–173.

BURT, L., HOLM, A. and DODD, B., 1999, Phonological awareness skills of 4 year old British children: an assessment and developmental data. *International Journal of Language and Communication Disorders*, **34**, 311–335.

CLEGG, J. and GINSBORG, J. (eds), 2006, *Language and Social Disadvantage: Theory into Practice* (Chichester: Wiley).

DOLLAGHAN, C. A. and CAMPBELL, T. F., 1998, Non-word repetition and child language impairment. *Journal of Speech, Language and Hearing Research*, **41**, 1136–1146.

DOLLAGHAN, C. A., CAMPBELL, T. F., PARADISE, J. L., FELMAND, H. M., JANOSKY, J., PITCAIRN, D. N. and KURS-LASKY, M., 1999, Maternal education and measures of early speech and language. *Journal of Speech, Language and Hearing Research*, **42**, 1432–1443.

DUNN, L. M., DUNN, L. M., WHETTON, C. and BURLEY, J., 1997, *The British Picture Vocabulary Scale*, 2nd edn (London: NFER Nelson).

FAZIO, B. B., NAREMORE, R. and CONNELL, P., 1996, Tracking children from poverty at risk for specific language impairments: a 3 years longitudinal study. *Journal of Speech and Hearing Research*, **39**, 611–624.

GATHERCOLE, S. and BADDERLY, A. D., 1996, *The Children's Test of Non Word Repetition* (London: The Psychological Corporation, Harcourt Assessment).

GILMOUR, J., HILL, B., PLACE, M. and SKUSE, D. H., 2004, Social communication deficits in conduct disorder: a clinical and community survey. *Journal of Child Psychology and Psychiatry*, **45**, 967–978.

Gross, J. (ed.), 2008, *Getting in Early: Primary Schools and Early Intervention* (London: The Smith Institute and the Centre for Social Justice).

HART, B. and RISLEY, R. R., 1995, *Meaningful Differences in the Everyday Experience of Young American Children* (Baltimore, MD: Paul Brookes).

KING, T. M., ROSENBERG, L. A., FUDDY, L., MCFARLANE, E., SIA, C. and DUGGAN, A. K., 2005, Prevalence and early identification of language delays among at-risk three year olds. *Journal of Developmental and Behavioral Pediatrics*, **26**(**4**), 293–303.

LABOV, W., 1972, *Language in the Inner City: Studies in the Black English Vernacular* (Philadelphia, PA: University of Pennsylvania Press).

LAW, J., RUSH, R., PARSONS, S. and SCHOON, I., 2009, Modelling developmental language difficulties from school entry into adulthood: literacy, mental health and employment outcomes. *Journal of Speech, Language and Hearing Research*, **52**, 1401–1416.

LAW, J., RUSH, R., PARSONS, S. and SCHOON, I., forthcoming 2010, The relationship between gender, receptive language and literacy from school entry through to adulthood: findings from the BCS70 birth cohort.

LEVENTHAL, T. and BROOKS-GUNN, J., 2000, The neighbourhoods they live in: the effects of neighbourhood residence upon child and adolescent outcomes. *Psychological Bulletin*, **126**, 309–337.

LOCKE, A. and GINSBORG, J., 2003, Spoken language in the early years: the cognitive and linguistic development of three to five year old children from socio-economically deprived backgrounds. *Educational and Child Psychology*, **20**, 68–79.

LOCKE, A., GINSBORG, J. and PEERS, I., 2002, Development and disadvantage: implications for the early years and beyond. *International Journal of Language and Communication Disorders*, **37**(**1**), 3–15.

MCDOWELL, K. B., LONIGAN, K. J. and GOLDSTEIN, H., 2007, Relations among socio-economic status, age, and predictors of phonological awareness. *Journal of Speech, Language and Hearing Research*, **50**, 1079–1092.

ROBERTSON, K. L., 1998, Phonological awareness and reading achievement of children from differing socio-economic backgrounds. *Dissertation Abstracts International Section A: Humanities and Social Sciences*, **58**(**8-A**), 3066.

SCHATZMAN, D. L. and STRAUSS, A., 1955, Social class and modes of communication. *American Journal of Sociology*, **60**, 329–338.

SCOTTISH INDEX OF MULTIPLE DEPRIVATION (SIMD), 2006, *Scottish Index of Multiple Deprivation* (available at: http://www.scotland.gov.uk/Topics/Statistics/SIMD/simdbackgrounddata2simd06) (accessed on 9 November 2009).

SEMEL, E., WIIG, E. H. and SECORD, W. A., 2006, *Clinical Evaluation of Language Fundamental (CELF IV)* (London: The Psychological Corporation, Harcourt Assessment).

TOMBLIN, J. B., RECORDS, N. L., BUCKWALTER, P., ZHANG, X., SMITH, E. and O'BRIEN, M., 1997, Prevalence of specific language impairment in kindergarten. *Journal of Speech, Language and Hearing Research*, **40**, 1245–1269.

TORGESON, J. K., WAGNER, R. K. and RASHOTTE, C. A., 1999, *Test of Word Reading Efficiency (TOWRE)* (Austin, TX: PRO-ED).

TUNMER, W. E., NESDALE, A. R. and WRIGHT, A. D., 1987, Syntactic awareness and reading acquisition. *British Journal of Developmental Psychology*, **5**, 25–34.

WECHSLER, D., 1999, *Wechsler Abbreviated Scale of Intelligence (WASI)* (San Antonio, TX: Harcourt Brace).

WELLS, G., 1985, *Language Development in the Preschool Years* (Cambridge: Cambridge University Press).